

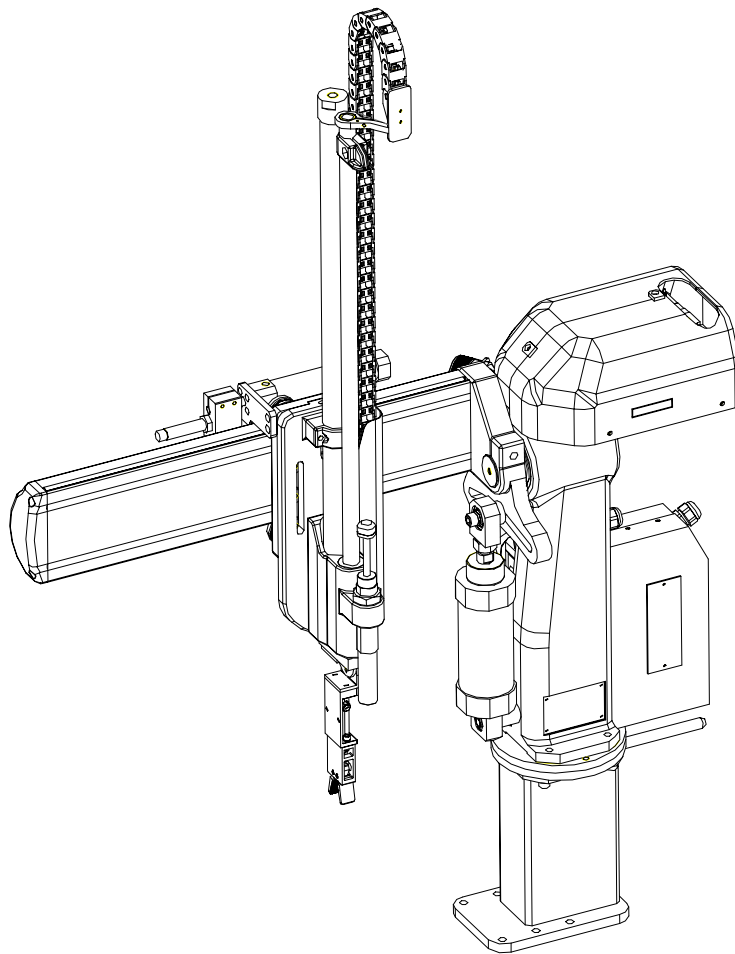
User Manual

TOPIV Swing Robot

■ TOPIV 450 ■ TOPIV 550

■ TOPIV 650 ■ TOPIV 750

■ TOPIV 950

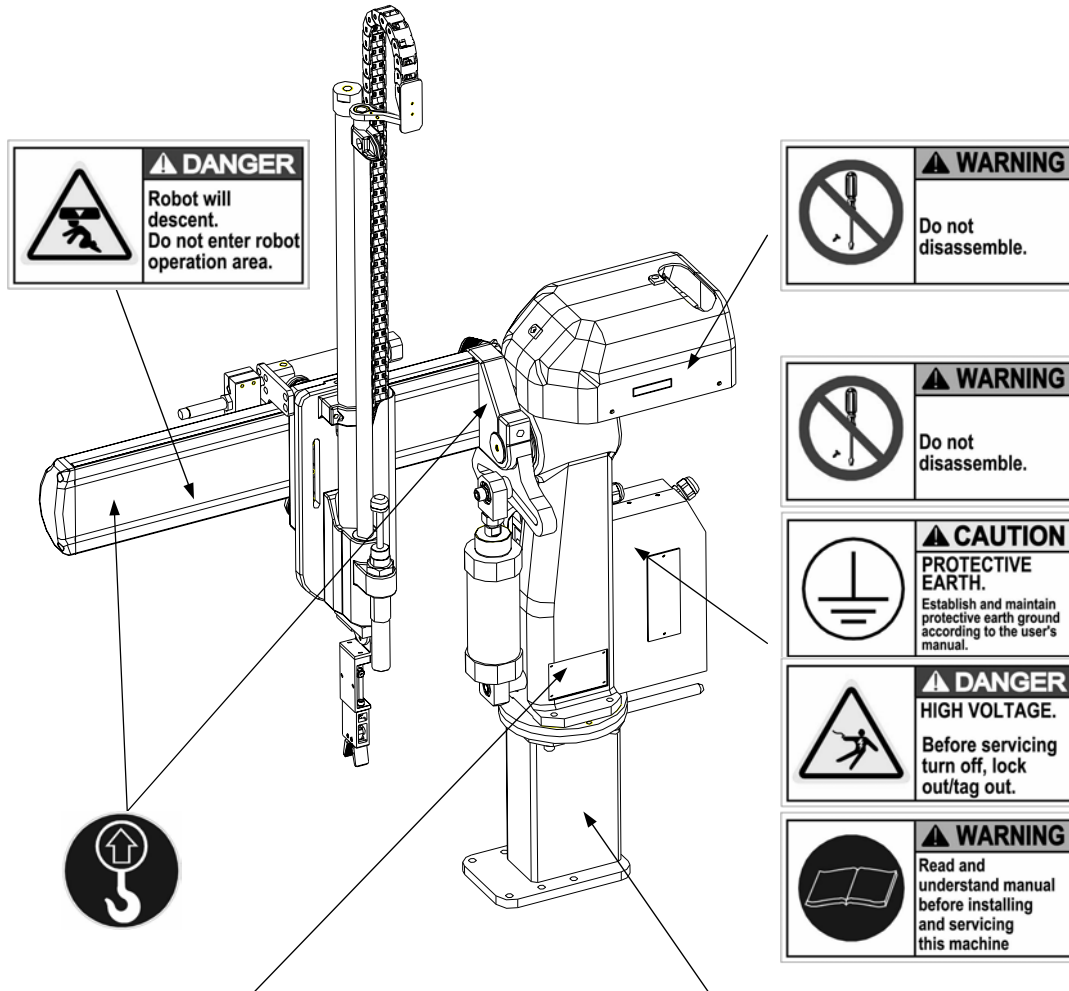


Read this manual completely prior to installing, operating or performing maintenance on this equipment.



Safety Signs

There are safety signs on the robot like below figures. Respect and follow the messages on these signs when operating or performing maintenance on the robot. Do not peel off these labels or signs

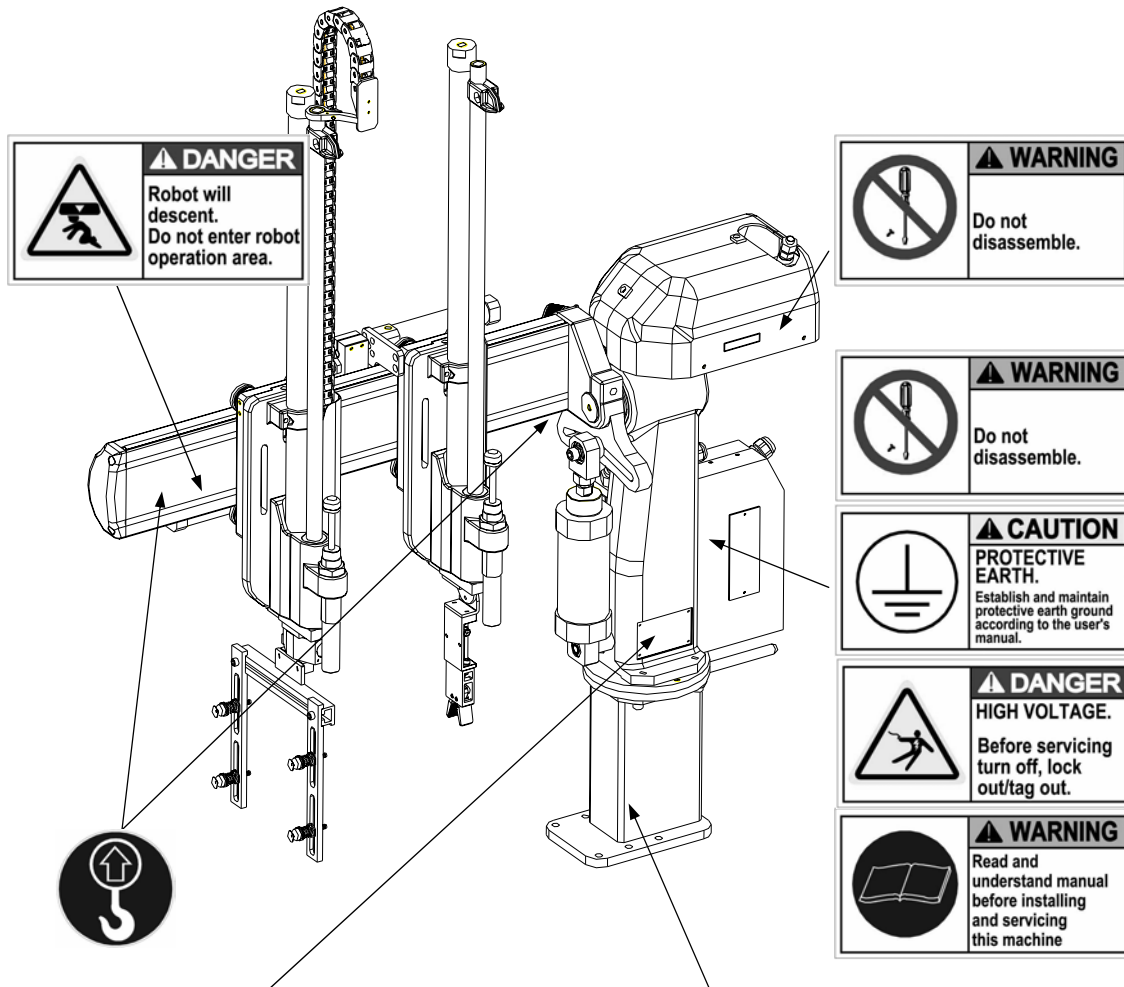




HYROBOTICS Co., Ltd. 173-228 GAWA-DONG SEO-GU INCHON KOREA TEL: +82-32-582-5040 FAX: +82-32-584-7040	
	Model Name
	Serial NO
	Product Code
	Manufacture Date
Rated Voltage	100Vac-240Vac
Rated Current	0.6A
Rated Frequency	50/60 Hz
Weight	35 kg

Warning

OPERATION OF THIS MACHINE WITHOUT PROPERLY READING THE INSTRUCTION GUIDE COULD RESULT IN INJURY.

- ALWAYS MORE THAN TWO QUALIFIED PERSONAL TOGETHER MUST WORK THE MAINTENANCE, SET UP , INSPECTION AND REPAIR THE ROBOT.
- ALWAYS WEAR PERSONAL SAFETY EQUIPMENT (SAFETY HELMET, SAFETY GLASS, SAFETY SHOES) FOR OPERATION OF THE ROBOT.
- DO NOT ENTER WORKING RANGE WITH MACHINE IN OPERATION.
- ROBOT MOTION CAN CAUSE SEVERE PERSONAL INJURY. THIS MACHINE WILL OPERATE AUTOMATICALLY.
- CUSTOMER IS RESPONSIBLE FOR PROPER INSTALLATION AND GUARDING, REFER TO ALL ANSI, FEDERAL, STATE, LOCAL OR OSHA, EUROMAP
- REGULATIONS THAT APPLY.
- PERFORM REGULA MAINTENANCE.
- WHEN CHANGE THE MOLD , MAKE SURE THERE IS NO INTERFERENCE BETWEEN MOLD AND ROBOT , CRANE.
- STOP THE OPREATION IMMEDIATELY WHEN ABONORMAL CONDITION OCCUR



		HYROBOTICS Co., Ltd. 173-228 GAJWA-DONG SEO-GU INCHON KOREA TEL:+82-32-582-5040 FAX:+82-32-584-7040	
	Model Name	TOPIV-TWIN 550	
	Serial NO		
	Product Code		
	Manufacture Date		
Rated Voltage		100Vac~240Vac	
Rated Current		0.6A	
Rated Frequency		50/60 Hz	
Weight		45 kg	

Warning

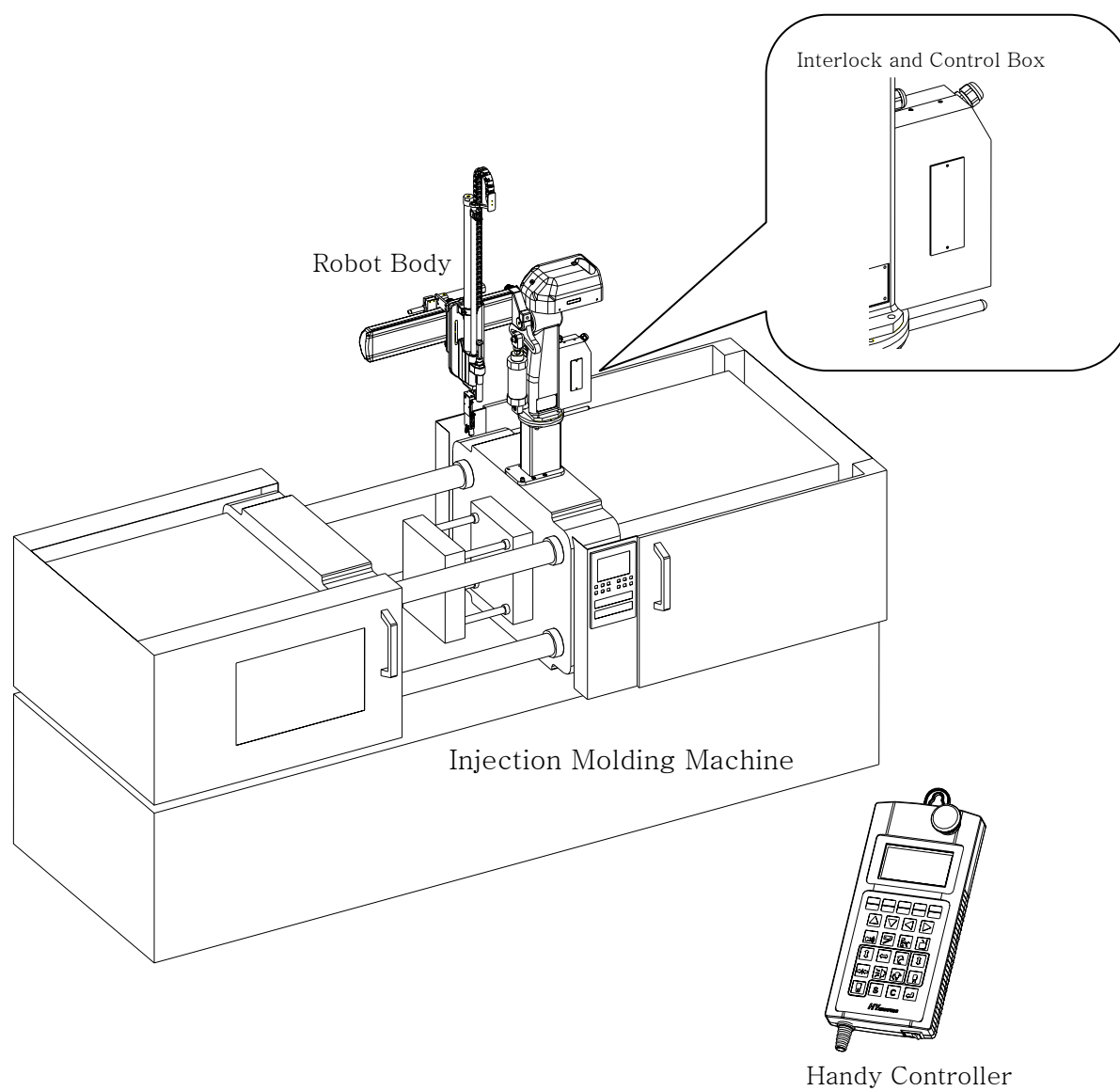
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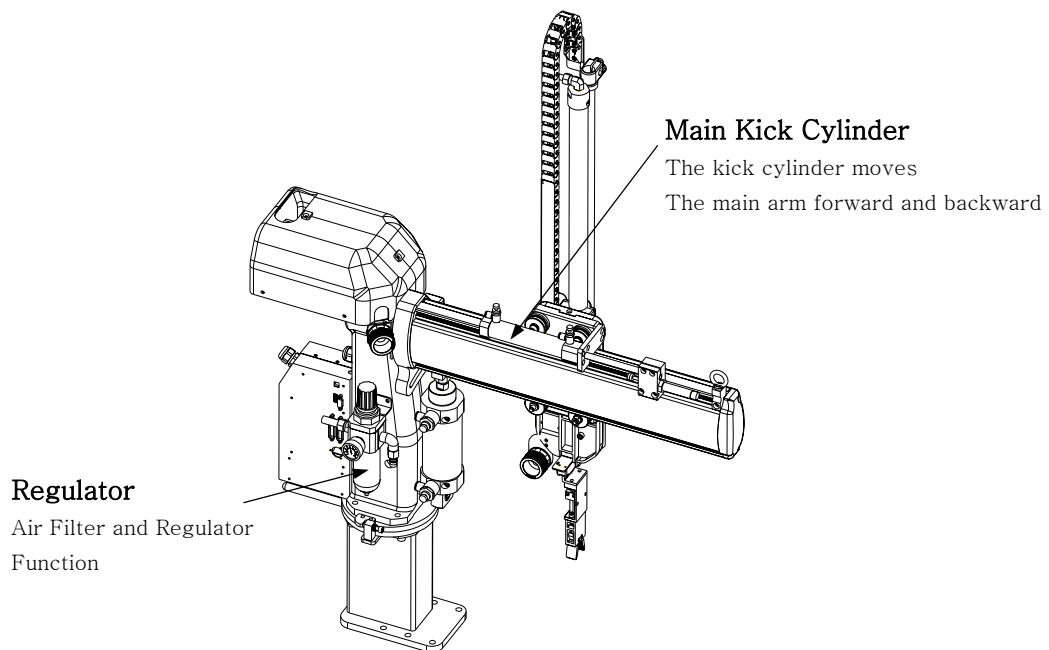
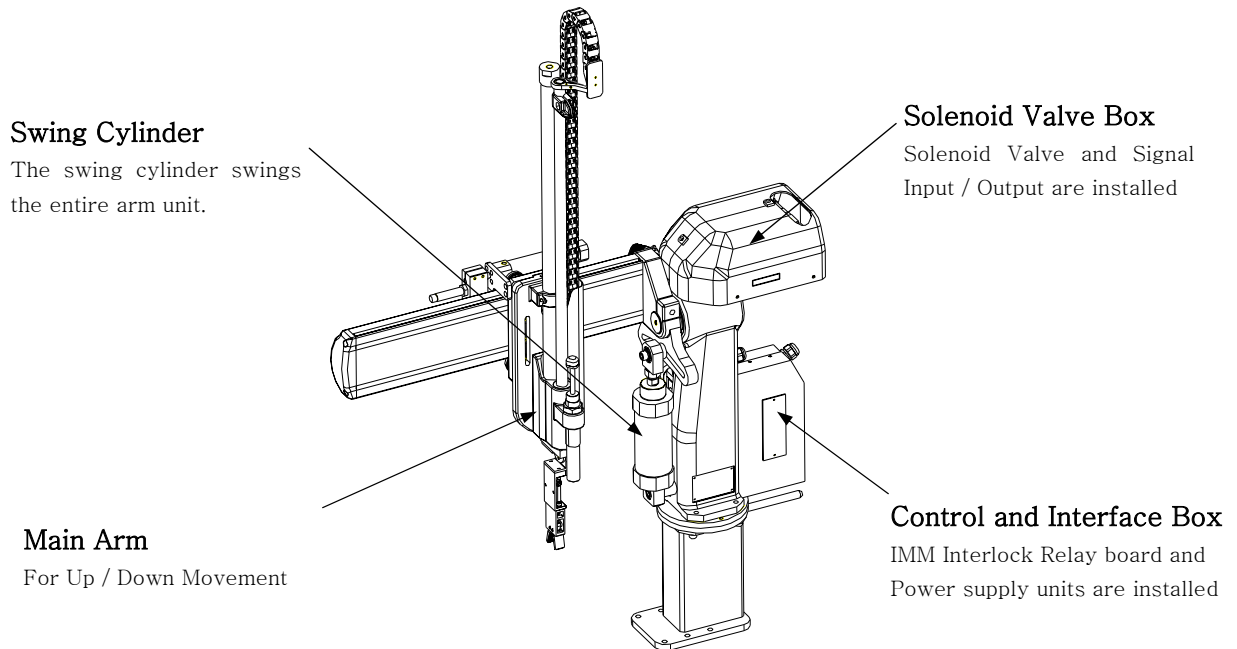
1.1 Robot Assembly

This Robot is consisted of

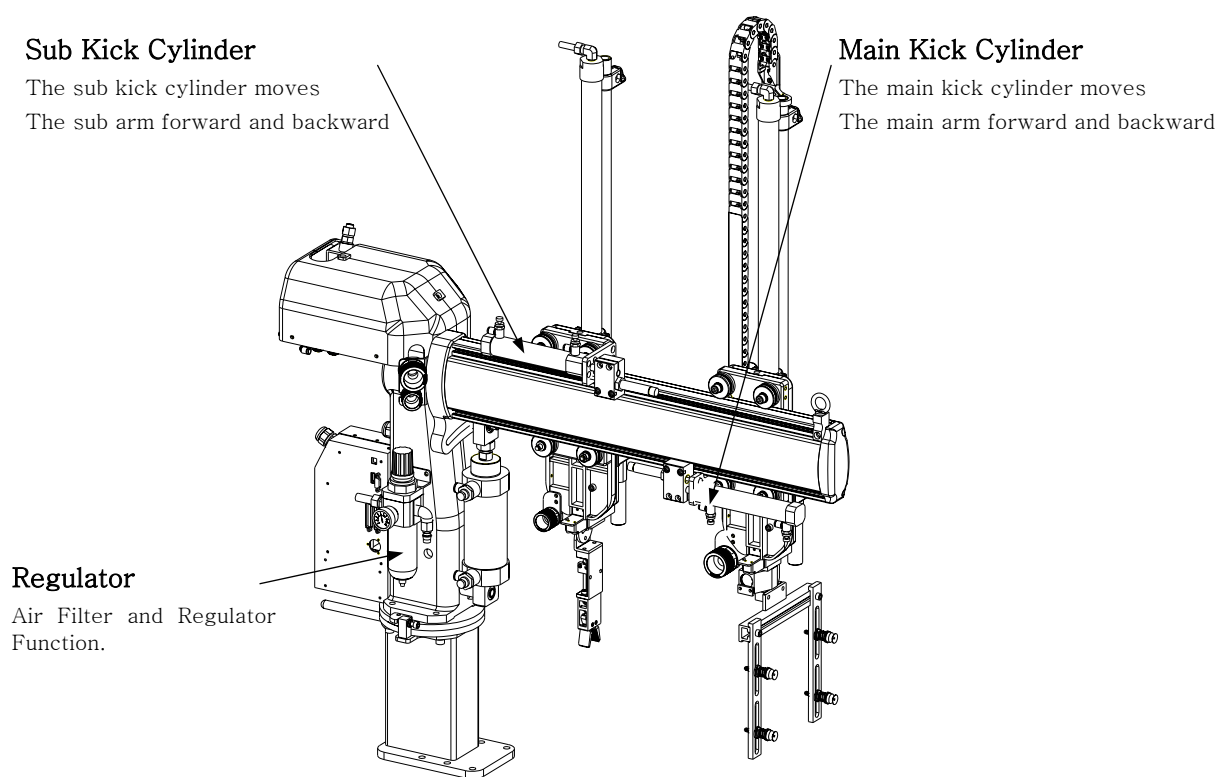
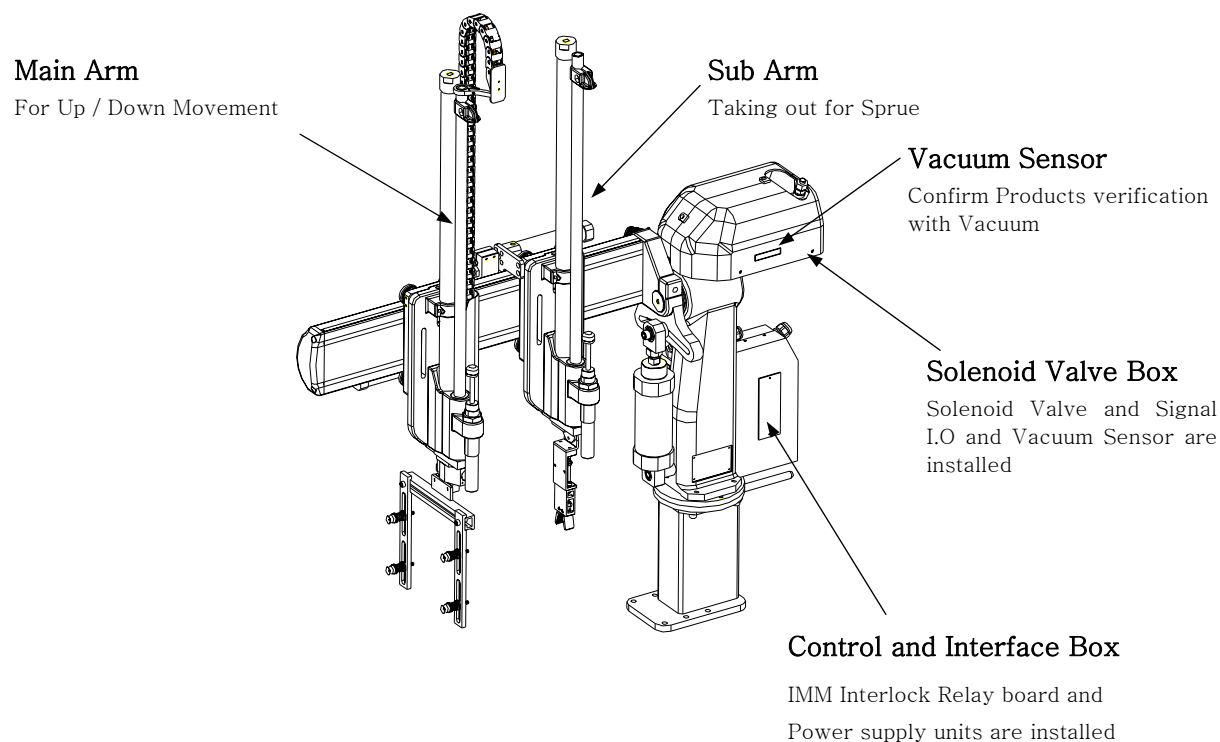
- Robot Body
- Interlock and Control Box
- Handy Controller



1.1.1 Robot Body

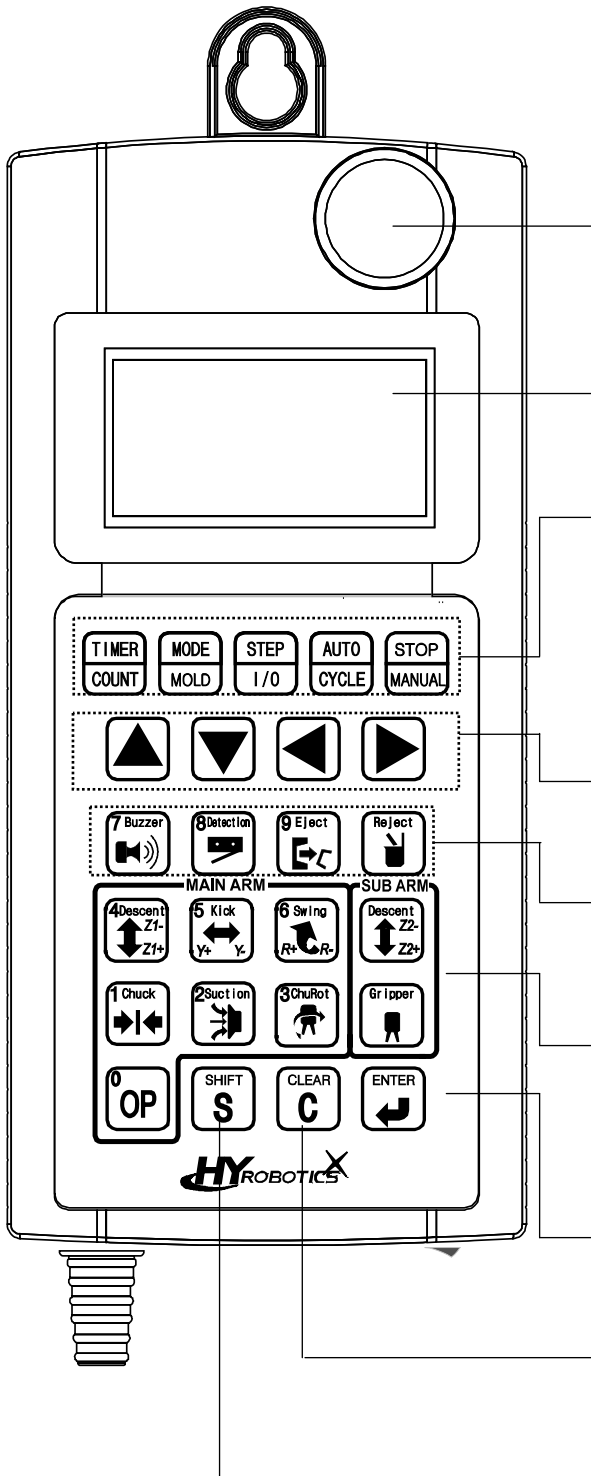


[A, X, XC, XN Type]



[Twin Type]

1.1.2 Handy Controller Function



- **ROBOT EMO Button**

Press ROBOT EMO Stop will stop operation of Robot and Activate IMM EMO Stop.

- **LED Display**

Display current operation status, error message, initial settings.

- **Function Keys**

These keys are used to access each setting screen and to switch between Auto and Manual Mode.

To use the function on the bottom half of a key, Hold down the S(Shift) key and then press the function key.

- **Arrow Key (Up / Down, Left /Right)**

Up / Down key move cursor to each item. Left/Right key select each mode

- **Mode Selection 2**

Alarm, Product Verification, Ejector, Reject (Bad Parts)

- **Manual Operation Key (Also Numeric Key Pad)**

Operate each axis or robot in manual mode
For Timer setting, Search mold number and Input Numeric number.

- **Enter Key**

Store the number and selected mode.

- **C (Clear) Key**

Cancel, Clear Error

- **S (Shift) Key**

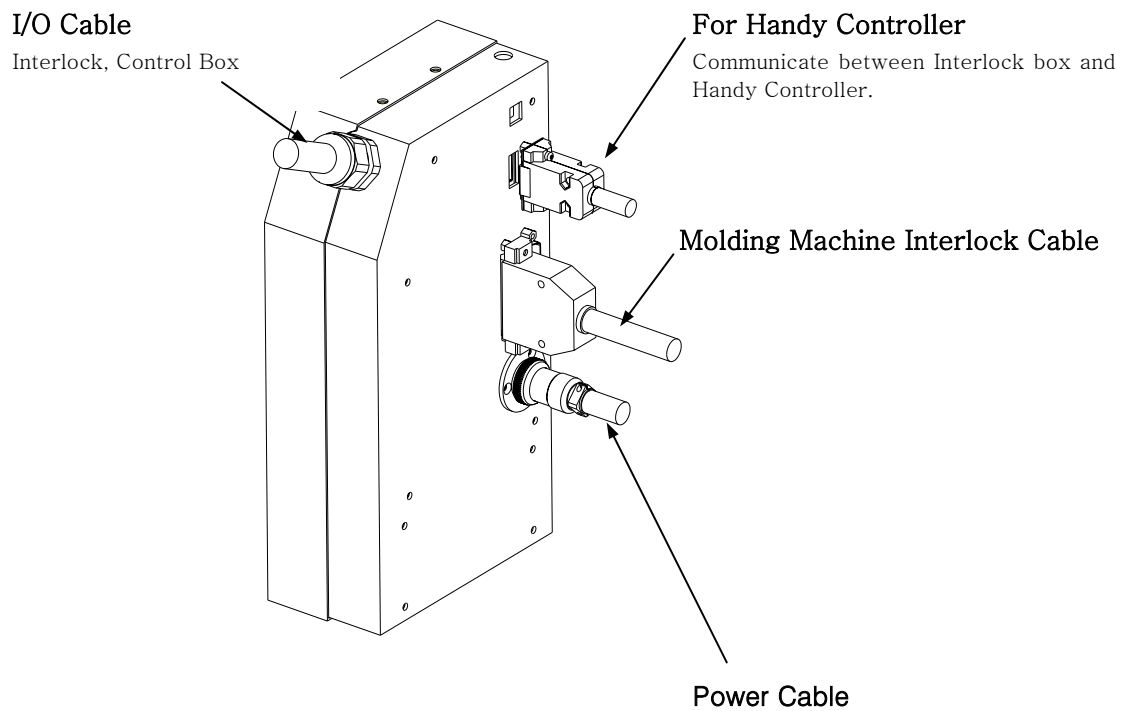
S key will use for upper case command

1.1.3 Interlock and Control Box

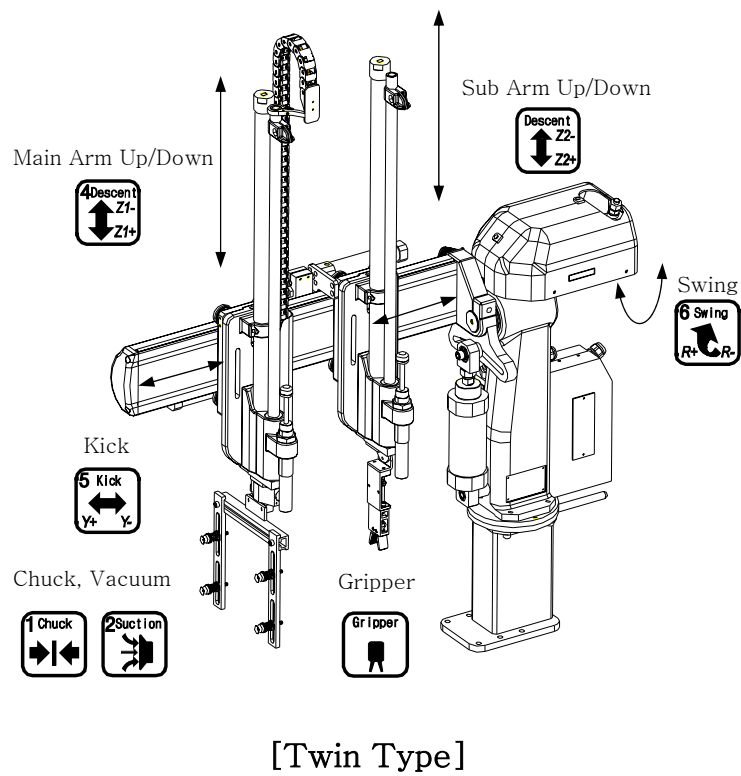
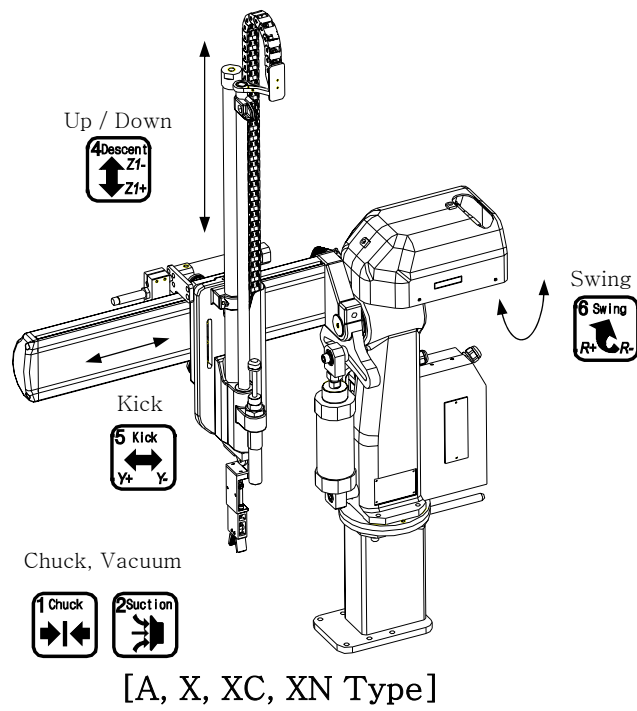
This box included Power Transformer, Relay , Relay board

Power trans receive power from IMM and supply the power to robot and handy

Controller. Each relay interlock for operation communicate handy controller CPU.

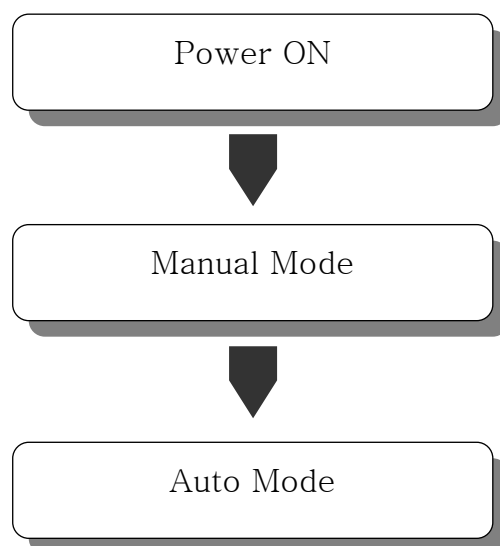


1.1.4 Each Axis



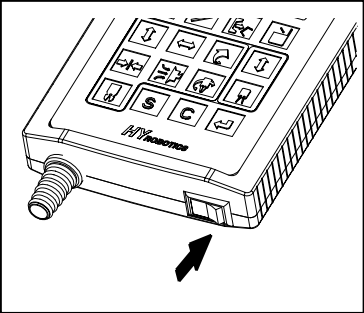
3.1 STEP FOR START-UP

Follow step for Auto Operation



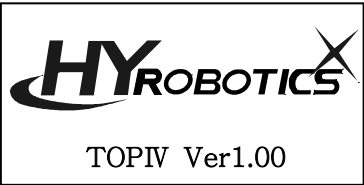
3.2 Start Up

NOTICE Make sure the proper voltage to be supplied to the Robot



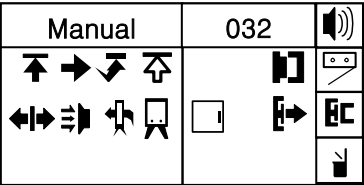
● STEP 1

Turn On Power



● STEP 2

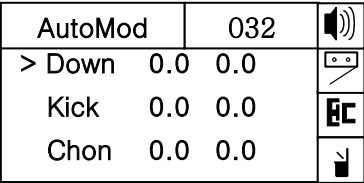
It will display System Version and go to Origin Point and Stop at Manual Mode



● STEP 3

Press Auto and Move to Auto Mode.

Press  and move to Auto Mode



● STEP 4

Press  to Auto Operation

3.3 Stop Operation



WARNING

Follow the next step to stop the robot. Power off and Disconnect air might able to cause serious problem.

AutoMod	032	
> Down	0.0 0.0	
Kick	0.0 0.0	
Chon	0.0 0.0	

● STEP 1

Press for Auto Mode

It will stop the operation after finish to run last step.. And moves to manual mode.

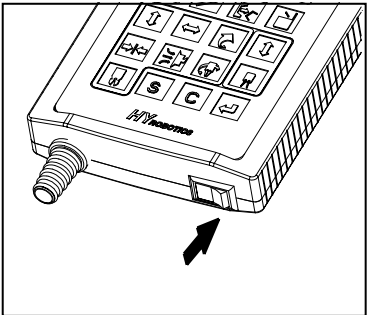
Manual	032	

It will not stop in the middle of step . If robot runs any step, it will finish the step and stop before next step. (Due to Pneumatic Operation Pressure)



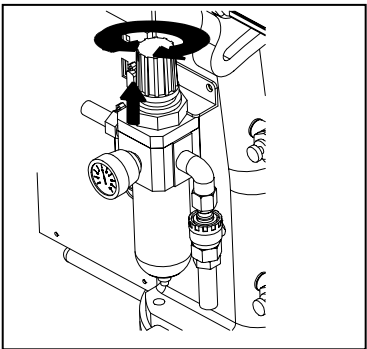
WARNING

Turn Off Handy Controller, Power off Molding Machine



● STEP 2

Turn Off Power.

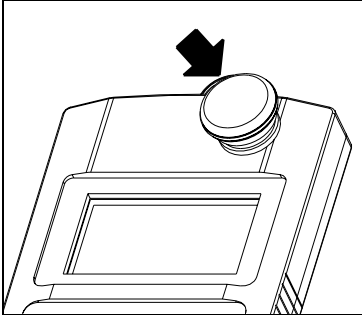


● STEP 3

Disconnect Air Pressure.

3.4 Emergency Stop

Press ROBOT EMO button in any dangerous situation (Protect People, Robot, Mold Etc)

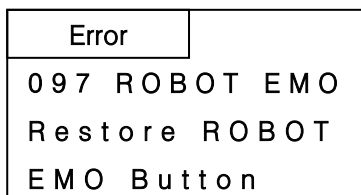


- **STEP 1**

Pressing ROBOT EMO button.

Robot will move to waiting position and stop Operation

Alarm and buzzer will be on and Error message will appear in the handy controller.

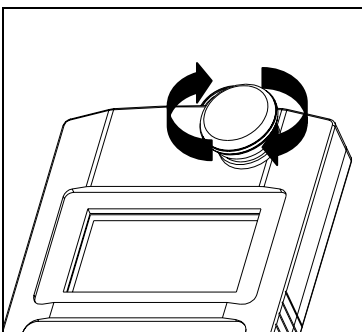


3.5 Restoring Emergency Stop



WARNING

Eliminate Emergency Stop Environment before restoring ROBOT EMO button.



- **STEP 1**

Eliminate Emergency Stop Situation.

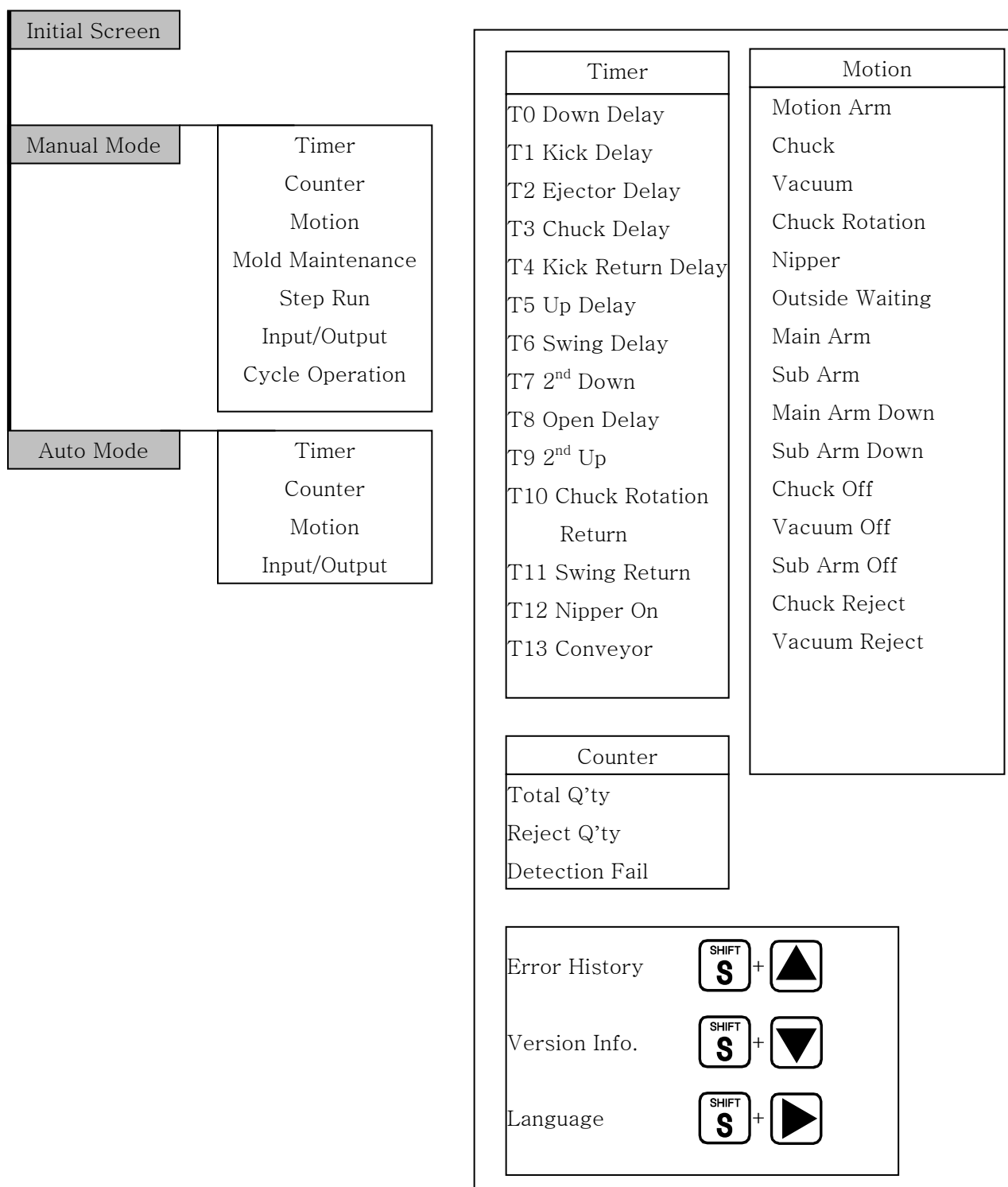
Rotate ROBOT EMO button to Clock Wise.

- **STEP 2**

Press  and stop Alarm and Buzzer, moves to Manual Mode

4 OPERATION

4.1 Screen Structure

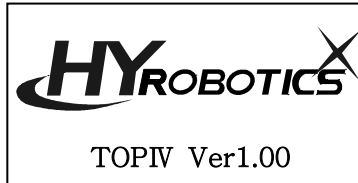


4.2 Initial Screen

Power on displays Logo and Robot Name/type , Robot Initiation and Move Origin Point

NOTICE

Selecting Outside Waiting Option will initiate Robot with Swing Operation.



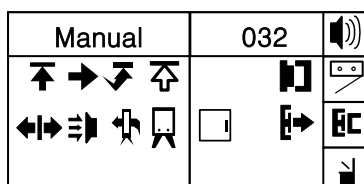
4.3 Manual Operation

(1) Manual Operation Description

Selecting Outside Waiting Option will initiate Robot with Swing Operation



CLEARING ROBOT MOTION AREA : It is the responsible of the operator to verify that the robot motion area is clear before any robot operation.



INPUT / OUT PUT					
NO	Icon	Description	No	Icon	Description
1	↓	Main Arm Down	12	≡	Vacuum On
2	↑	Main Arm Up	13	⏏	Vacuum Off
3	⬆	Main Arm Up Complete	14	⤵	Chuck Rotation
4	←	Kick	15	⬆	Chuck Rotation Return
5	→	Kick Return	16	⬇	Sub Arm Down
6	↘	Swing	17	⬆	Sub Arm Up
7	↗	Swing Complete	18	⬆	Sub Arm Up Complete
8	↖	Swing Return	19	⇒	Sub Arm Kick
9	↗	Swing Return Complete	20	⇐	Sub Arm Kick Return
10	⇄	Chuck	21	🖐	Sub Arm Gripper
11	⇄	Chuck Off	22	🖐	Sub Arm Gripper Off

Interlock Signal					
Input			Output		
NO	Icon	Description	NO	Icon	Description
1	🔄	Full Auto	5	🚫	Mold Open/Close Complete Signal
2	🔧	Auto Injection	6	🚪	Ejector Signal
3	🔧	Mold Open Complete			
4	🚪	Safety Door			

(2) Button Function in Manual Mode















Do not enter robot motion area. If anyone enter the robot motion area during Auto operation or Manual Operation, serious accident could results.

NOTICE

Robot arm will not descent if mold is not open.

NO	Button	Description
1		Press the Timer button, LCD displays timer mode for delay time settings.
2	+	Press the Timer button with Shift button, (Counter) LCD displays Counter screen , Counter screens display Total Q'ty, Reject Q'ty, Detection Fail.
3		Press Mode button, LCD displays Mode screen (Motion Mode).
4	+	Press Mode Button with Shift Button, (Mold) LCD displays Mold Maintenance Screen. (Search Mold Number, Open and Create, Delete Mold File)
5		Press Step Button LCD displays Step Motion Mode Screen (Robot can operate Step by Step Operation.)
6	+	Press Step Button with Shift Button, (I/O) LCD display Input / Output Signal.
7		Press Auto Button LCD displays Auto Mode Screen.
8	+	Press Auto Button with Shift Button (Cycle) LCD displays One Cycle Operation Screen.
9	+	Press Up Arrow with Shift Button. LCD displays Error History Screen
10	+	Press Down Arrow with Shift Button. LCD displays Rom version Information
12	+	Press Right Arrow with Shift Button. LCD displays the commend in the screen with selected Language.

NO	Button	Description
13		Press Buzzer Button(Only in Manual Mode) LCD Screen displays setting for Buzzer On/Off
14		Press Detection Button with Shift(Only in Manual Mode) On/Off Screen for Parts Verification Function
15		Press Ejector Button(Only in Manual Mode) LCD Screen displays Selection for Ejector Control Function
16		Press Reject Button (Only in Manual Mode) Robot will separate Rejected Part (Signal From IMM)
17		Press Descent Button Move Main Arm Down, Press again, Move Main Arm up.
18		Press Kick Button Move Main Arm Kick, Press again, Move Main arm Kick Return
19		Press Swing Button Robot arm will Swing , Press again, Robot arm swing return
20		Press Chuck Chuck , Press again, Chuck Off
21		Press Suction Suction, Press again, Suction Off
22		Press Chuck Rotation Rotate Chuck, Press again, Chuck Rotate Return
23		Press Descent Button for Sub Arm Move Sub Arm Down, Press again, Move Sub Arm up
24		Press Gripper Grip and Grip Off

4.3.1 Timer Set Up

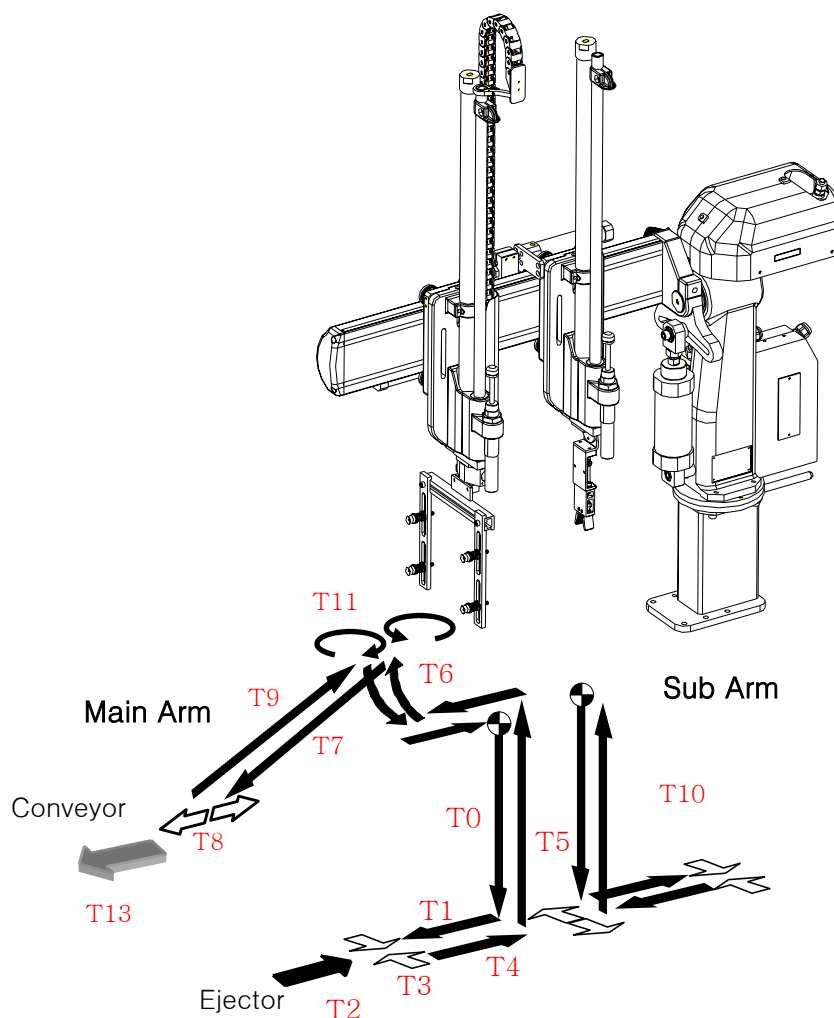
(1) Timer Description

Timer setup will control the Robot motion smoothly with Injection Molding Machine Operation.








Timers will not be saved separately with Mold Files. For examples setting T0 as a 0.2 Seconds will make all other mold file use T0 as 0.2 Seconds

Timer	032	
T0 Down	0.2	0.0
T1 Kick	0.0 <	0.0
T2 Eject	0.0	0.0



NO	Default (sec)	Name	Display	Description	
T0	0.5	Down	Down	After Mold Open Complete, delay time for move arm down	
T1	0.5	Kick	Kick	After starting Down, Delay time for Kick Movement	
T2	0.5	Ejector	Eject	After starting Kick, Delay time for Ejector Operation	
T3	0.5	Chuck	Chuck	Ejector Function	After Ejector On, Delay time for Chuck On
				No Ejector Fun.	After Kick On, Delay time for Chuck On
T4	0.5	Kick Return	KicRt	After Suction or Grip the Parts, Delay time for Kick Return	
T5	0.5	Up	Up	After Suction or Grip the Parts, Delay time for Up	
T6	0.5	Swing	Swing	After Up Complete, Delay time for Swing Motion	
T7	0.5	2 nd Down	2Down	After Swing Complete, Delay time for 2 nd Down	
T8	0.5	Open	Open	After Swing Complete, Delay time for Part Open	
T9	0.5	2 nd Up	2Up	After Parts Open , Delay time for 2 nd Up	
T10	0.0	Chuck Rot Return	CRoRt	After 2 nd Up Complete, Delay time for Chuck Rotation Return	
T11	0.5	Swing Return	SwRt	After 2 nd Up Complete, Delay time for Swing Return	
T12	0.5	Nipper ON	NipOn	Delay time for Nipper Cutting Operation (With Open Delay)	
T13	3.0	Conveyor	Conve	After 2 nd Up, Delay time for Conveyor Operation.	

(2) Timer Button Function

NO	Button	Description
1		‘<’ key moves up and down to select each Timer.
2	Numeric Key	Displays Delay Time.
3		Press the Enter Button to save the change
4		Cancel the Input
5		Press Stop Button to change to Manual Mode
6		Press Auto Button to change to Auto Mode

(3) Programming Timer Settings

Timer settings can be viewed and changed using the handy controller under two conditions.

1. When the robot is in Timer Mode.
2. During Auto Mode (While Robot is running)

NOTICE

Timer can be changed during Auto Mode, but cannot be changed during Cycle and Step Operation.

Press the Timer button to move Timer Mode while in Auto Mode

Setting T1 (Kick Delay) to 0.3 Seconds


Timer	032
T0 Down	0.5 < 0.0
T1 Kick	0.5 0.0
T2 Eject	0.5 0.0

● STEP1

Press  move to Timer Mode in Manual Mode


Timer	032
T0 Down	0.5 0.0
T1 Kick	0.5 < 0.0
T2 Eject	0.5 0.0

● STEP2

Press , Move < to the T1 (Kick)


Timer	032
T0 Down	0.5 0.0
T1 Kick	0.5 < 0.3
T2 Eject	0.5 0.0


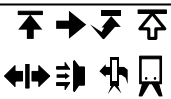


● STEP3

Press , input 0.3 sec.


Timer	032
T0 Down	0.5 0.0
T1 Kick	0.3 < 0.3
T2 Eject	0.5 0.0

● STEP4

Press the  to save the change

Manual	032	
		

● STEP5

Press , Move to Manual Mode.

4.3.2 Counter

(1) Description





Counter can be viewed and changed using handy controller.

Counter Mode displays Total Production Quantity , Rejected Quantity , Detection Failure Quantity.

Counter	032
>C0 TotQty	10000
C1 RejQty	2
C2 DetFai	3

NO	Name	Description
C0	TotQty	Total Operation (Production) Q'ty : Robot Operation Cycle after Reset
C1	RejQty	Displays Rejected Q'ty (Need Signal from IMM)
C2	DetFai	Detection Failure Q'ty

(2) Each Button Function in Counter Mode
















NO	Button	Description
1		Pressing arrow key scroll the > key through the list.
2		Press Clear Key will Reset the item on > key. Press more than 2 seconds.
3		Press Stop button to change Manual Operation mode.
4		Press Auto button to back to Auto Operation Mode

(3) Counter Reset Method



NOTICE

Counter can be changed during Auto Mode, but can not be changed during Cycle and Step Operation.

Resetting C0 to 0

Manual	032	
   	 	
   	 	
















● **STEP1**

Press  ,  at the same time displays Counter Screen.

Counter	032
>C0TotQty	10000
C1 Reject	2
C2 DetFai	3

● **STEP2**

Press  for 2 seconds, Total will be 0 (Reset).

Manual	032	
   	 	
   	 	

● **STEP3**

Press  displays manual mode

4.3.3 Mode






(1) Mode description

Robot motion pattern can be decided by selecting of Each Motion Mode

M00ArmSet	M&S ▶
M01Chuck	Use
M02Vacuum	NoUse
M03ChuRot	Use

The below icons uses for robot motion in this book .

NOTICE

-  Origin
-  Chuck
-  Chuck Off
-  Vacuum
-  Vacuum Off

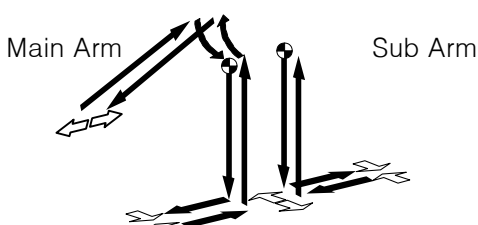
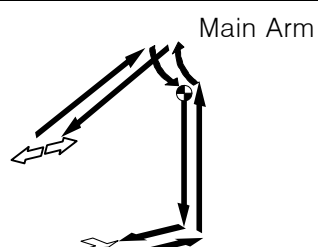
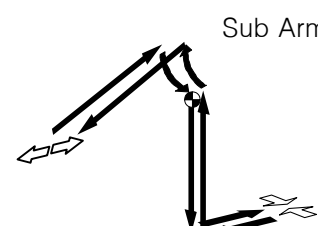
① Robot Arm Setting

Setting for Take-Out Motion Arm. Default setting is “M&S”. [This setting required in only Twin]

NOTICE

After Main arm Down, pressing Kick button in MainSub Arm Setting will operate only Main arm Kick Motion.

M00Arm Set	M&S ►
M01Chuck	Use
M02Vacuum	No Use
M03ChuRot	No Use

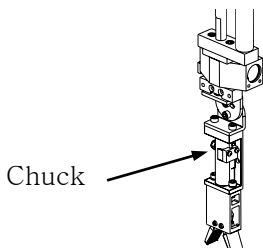
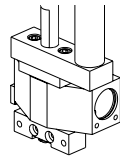
Name	Description	Motion
M&S (=Default)	Select Main and Sub for Both Arm operation	
M-Arm	Select Main for Main Arm Operation (Taking Out Parts)	
S-Arm	Select Sub for Sub Arm Operation (Sprue or Gate Picking)	

4. Operation

② Chuck

Setting for using Chuck Operation for Take Out, Default setting is Use.

M00ArmSet	M&S
M01Chuck	Use ►
M02Vacuum	NoUse
M03ChuRot	Use

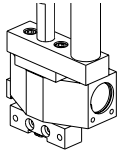
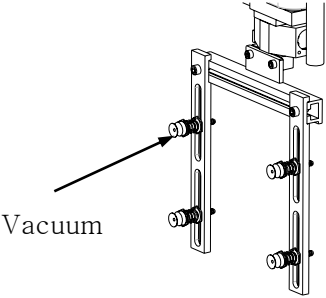
Name	Description	Motion
Use (=Default)	Take out Parts with Chuck Operation	
NoUse	Take Out Parts without Chuck Operation (Vacuum)	

③ Vacuum

Setting for using Vacuum Operation for Take Out, Default setting is No Use.

[This function is only for XC type and Twin]

M00ArmSet	M&S
M01Chuck	Use
M02Vacuum	NoUse ►
M03ChuRot	Use

Name	Description	Motion
NoUse	Take Out Parts without Vacuum Operation (Using Chuck).	
Use (=Default)	Take Out Parts with Vacuum Operation.	

4. Operation

④Chuck Rotation

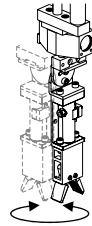
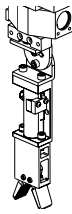
Setting for using Chuck Rotation Operation, Default setting is Use.

[This function is only for X, XC type and Twin]

NOTICE

In Twin Robot, When Arm Set is “MainSub”, Both arm should be Move to the End of Axis (Kick) in order to operate Chuck Rotation.

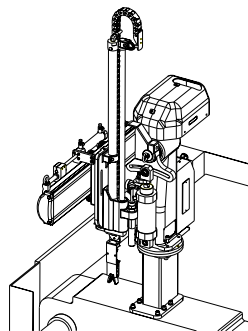
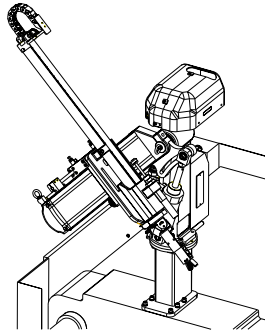
M00ArmSet	M&S
M01Chuck	Use
M02Vacuum	NoUse
M03ChuRot	Use ▶

Name	Description	Motion
Use (=Default)	Use Chuck Rotation (If parts is wide attached with sprue, taking out parts with sprue and Open after chuck rotation will be a good application for use this function)	
No Use	Chuck Rotation is not in Use mode	

⑤Outside Waiting

The Robot can wait at the outside position with swing until mold completely open when other auxiliary attached movable platen (Clamp Side Mold) . After mold completely open, robot arm will swing and descent to take out parts. Default setting is No Use

M05OutWai	NoUse ▶
M06M-Arm	LType
S-Arm	LType
M07MArmDn	Nozzl

Name	Description	Motion
No Use (=Default)	Waiting without swing until mold open complete	
Use	Waiting with swing until mold open complete	

4. Operation

⑥Main Arm and Sub Arm

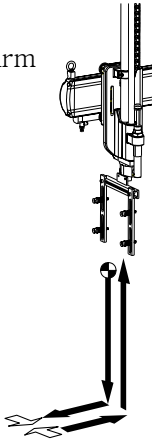
*Main Arm (M-Arm)

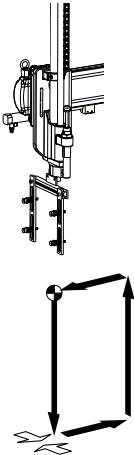
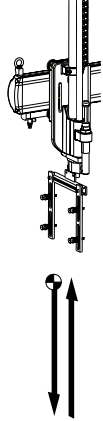
Setting Arm whether will Down, Kick, Grip (L Type) or Down Grip and Kick Return (U Type).
Default Setting is L Type.

NOTICE

With Down of Main Arm and Sub Arm, Kick motion is moving to Parts, and
Kick Return Motion is Moving back to Up Position.

M05OutWai	NoUse
M06M-Arm	LType ▶
S-Arm	LType
M07MAinDn	Nozzl

Name	Description	Motion
L Type (=Default)	Down, Kick, Chuck or Suction, Kick Return, Up.	<div><div>Main Arm</div></div>

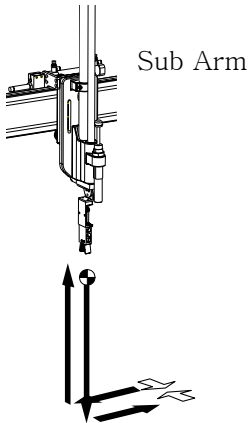
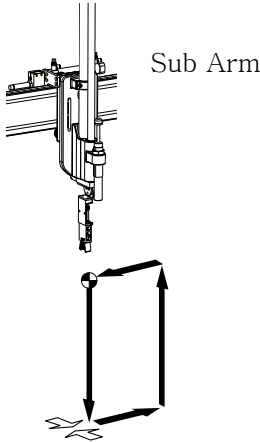
U Type	Down, Chuck or Suction, Kick Return, Up. Kick	<p>Main Arm</p> 
I Type	Decent, Chuck, Up	<p>Main Arm</p> 

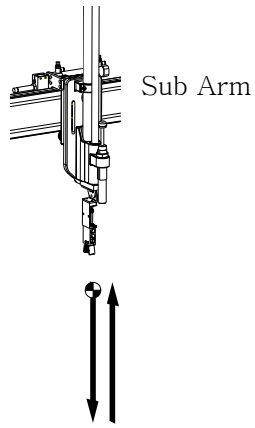
4. Operation

*Sub Arm [Only in Twin Type]

Setting Arm whether will Down, Kick, Grip (L Type) or Down Grip and Kick Return (U Type).
Default Setting is L Type.

M05OutWai	No Use
M06M-Arm	LType
S-Arm	LType ▶
M07MArmDn	Nozzle

Name	Description	Motion
L Type (=Default)	Down, Kick, Chuck, Kick Return , Up.	
U Type	Down, Chuck, Kick Return, Up, Kick	

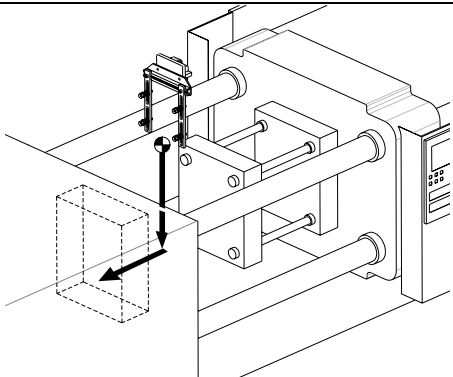
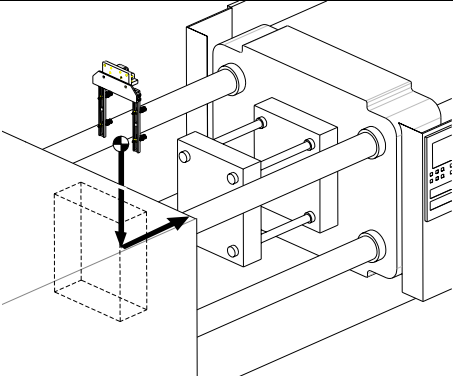
I Type	Down, Chuck, Up.	
--------	------------------	---

⑦ Main Arm Down (MarmDn) and Sub Arm Down (SArmDn)

*Main Arm Down

Setting Main Arm Down Position to Nozzle Side Mold Platen or Clamp Side Mold Platen

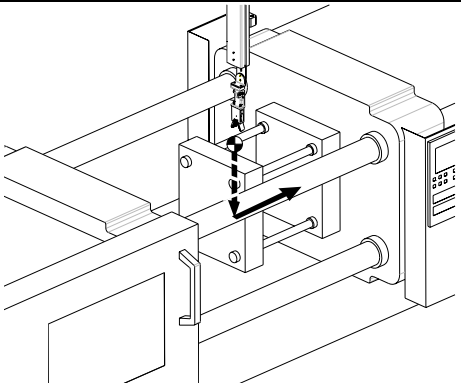
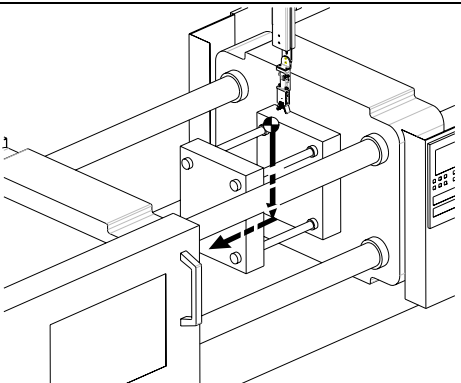
M05OutWai	NoUse
M06MArmDn	LMotion
SArmDn	LMotion
M07MainDst	Nozzle ►

Name	Description	Motion
Nozzle (=Default)	MainArm will descent at the Nozzle Side	
Clamp	MainArm will descent at the Clamp Side	

*Sub Arm Down

Setting Sub Arm Down Position to Nozzle Side Mold Platen or Clamp Side Mold Platen

SADown	Clamp	►
M08ChuOff	2 Dst	
M09VacOff	2 Ast	
M10SChOff	InMold	

Name	Description	Motion
Clamp (=Default)	SubArm will descent at the Clamp Side	
Nozzle	SubArm will descent at the Nozzle Side	

4. Operation

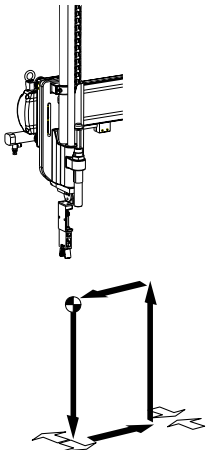
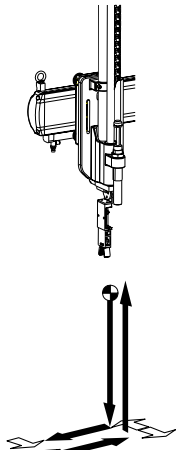
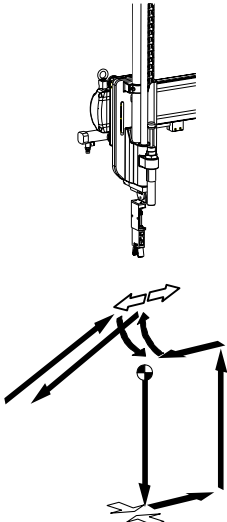
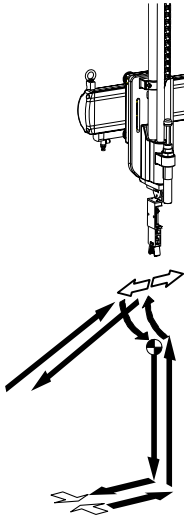
⑧ Chuck Off

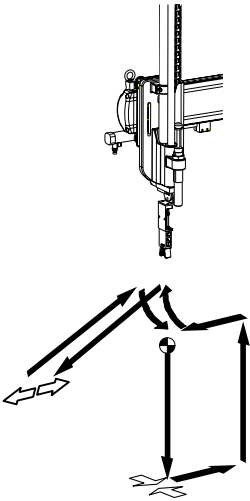
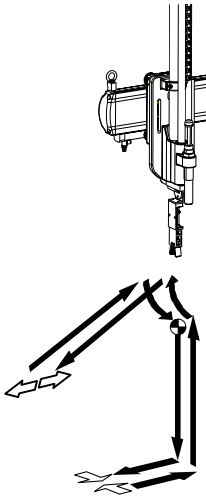
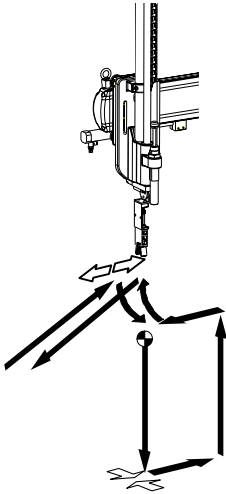
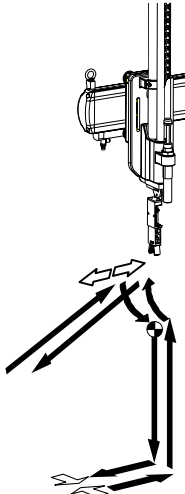
Setting the step of Part Open in Normal Production (No Rejected Parts from IMM.), Default is 2nd Down.

NOTICE

When use Chuck and Suction motion at the same time and if Chuck Release Motion and Suction Release step is different, there will be different Delay time

SArmDn	Clamp
M08ChuOff	2Down ►
M09VacOff	2Down
M10SChOff	In Mold

	U Type	L Type
In Mold		
OutSid		

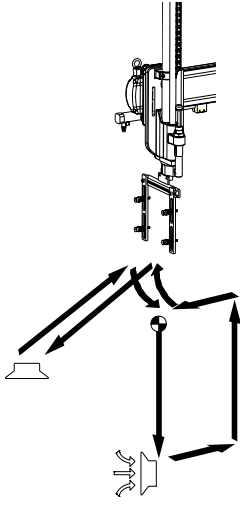
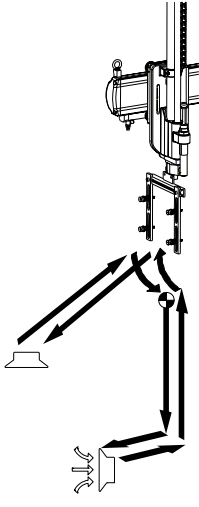
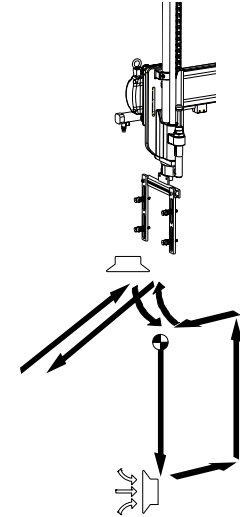
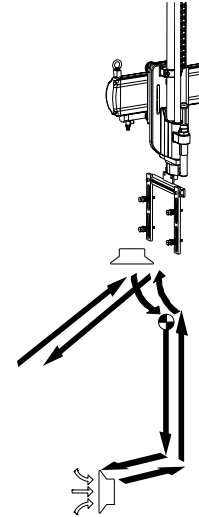
<p>2Down (=Default)</p>		
<p>2Up</p>		

⑨ Vacuum Off

Setting the step of Vacuum Off in Normal Production (No Rejected Parts from IMM.), Default is 2nd Down. [XC, Twin Type Only]

SArmDn	Clamp
M08ChuOff	2Down
M09VacOff	2Down▶
M10SChOff	In Mold

	U Type	L Type
In Mold		
OutSid		

<p>2nd Down (=Default)</p>		
<p>2nd Up</p>		

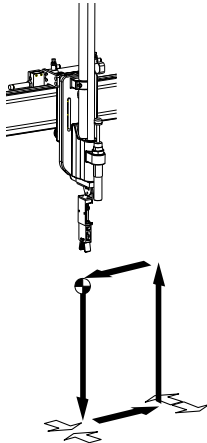
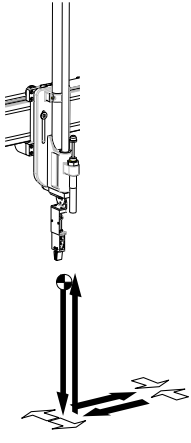
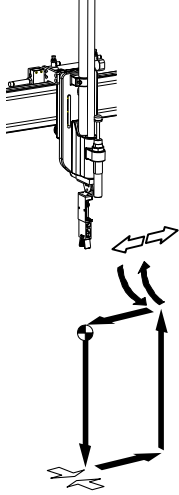
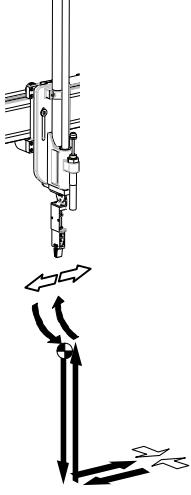
⑩ Sub Chuck Off

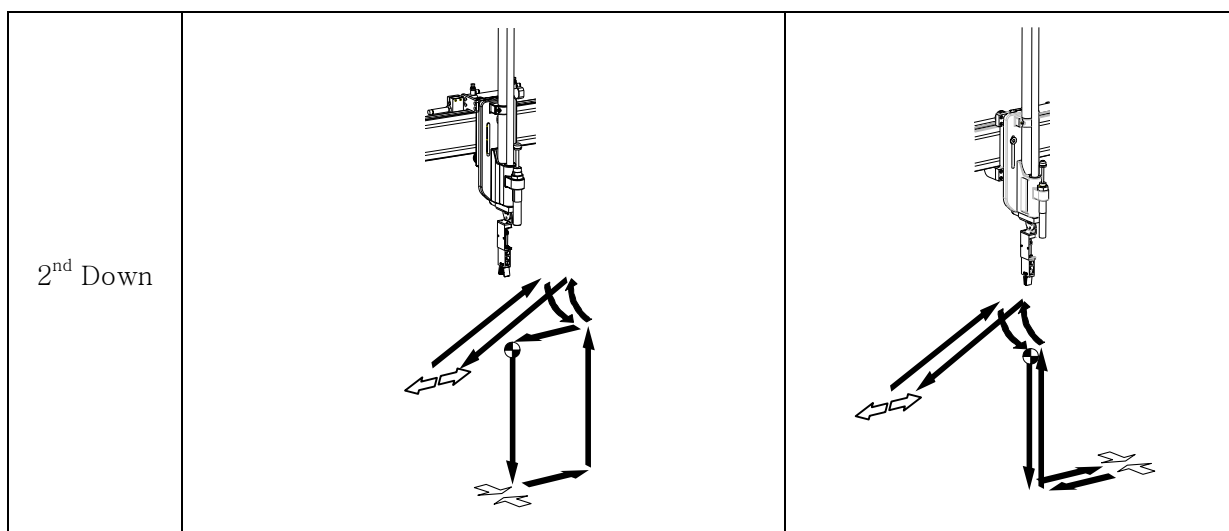
Setting Sub Chuck Off Position (Twin Type Only)

NOTICE

Sub Arm Gripper releases with Chuck when Chuck is in Use Mode
Sub Arm Gripper releases with Vacuum when Chuck is Not in Use Mode.

SArmDn	Clamp
M08ChuOff	2 Des
M09VacOff	2 Des
M10SChOff	In Mold ▶

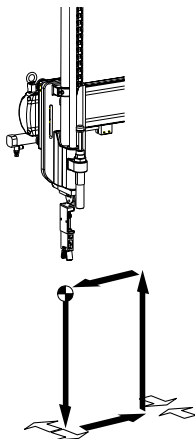
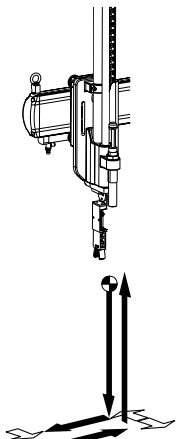
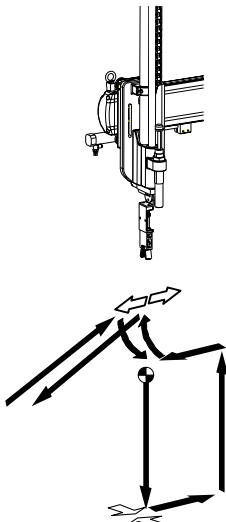
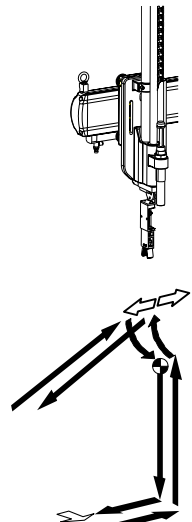
	U Motion	L Motion
In Mold (=Default)		
OutSid		

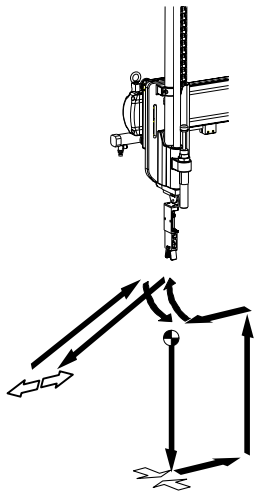
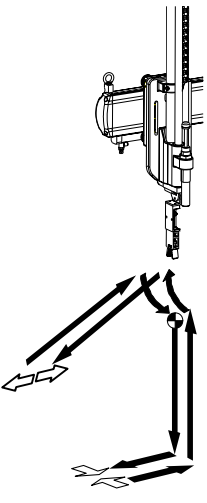
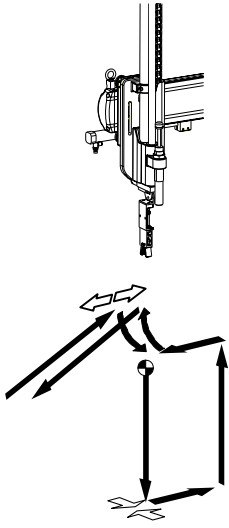
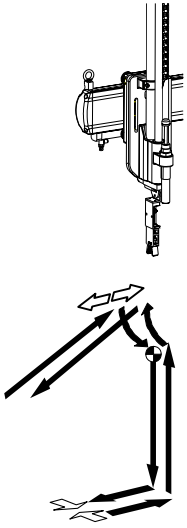


⑪ Chuck Reject

Setting the Chucking Reject Open Location when reject signal received from IMM, Default set is In Mold

M11ChuRej	In Mold	►
M12VacRej	In Mold	

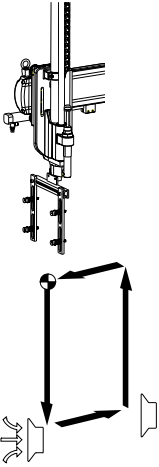
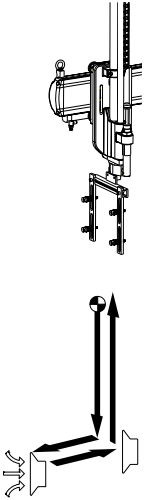
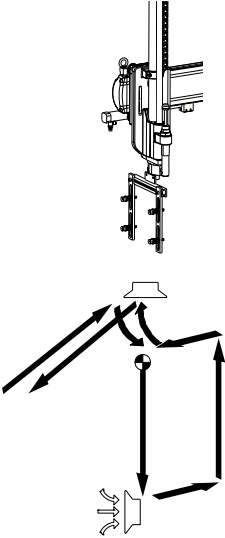
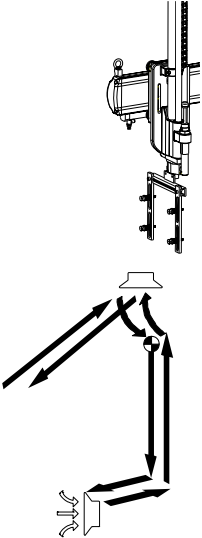
	U Motion	L Motion
In Mold (=Default)		
OutSid		

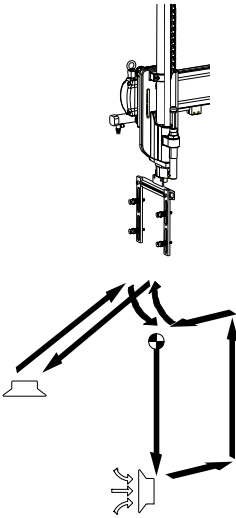
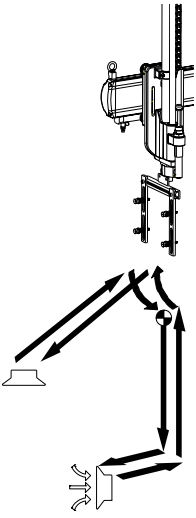
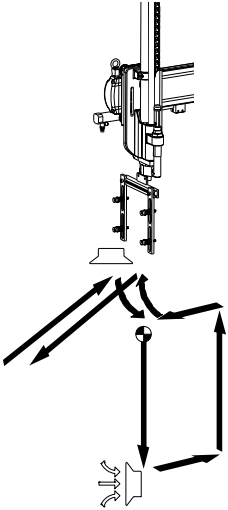
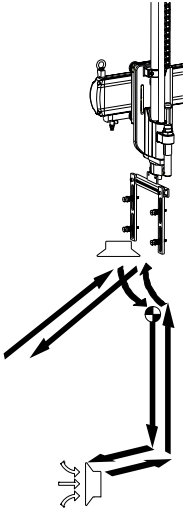
2 nd Down		
2 nd Up		

⑫ Vacuum Reject






Setting the Chucking Reject Open Location when reject signal received from IMM, Default set is In Mold [For XC, Twin type]

M11ChuRej	In Mold
M12VacRej	In Mold ▶

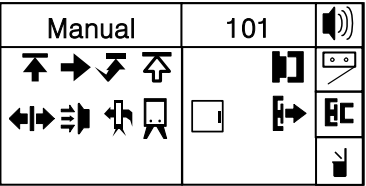
	U Motion	L Motion
In Mold (=Default)		
OutSid		

<p>2nd Down</p>		
<p>2nd Up</p>		


(2) Each Button Function in the Mode

NO	Button	Description
1		Pressing Up and Down arrow key will scroll '▶' icon and select line
2		Press Right and Left arrow key will change Mode / Setting and Blink '▶' icon
3	Numeric Key	For Input Numeric Number
4		Pressing Enter key will stop Blinking of the '▶' icon and save input data
5		Stop Auto Operation and Back to Manual Mode
6		Pressing Auto Button will back to Auto Operation Mode

(3) Mode Confirmation




● STEP1

Press  , will move to mode screen from Manual Mode.


M01Chuck	Use	▶
M05Outwai	NoUse	
M06M-Arm	LType	
M07MarmDn	Nozzl	

● STEP2



Press  , “▶” icon will scroll down.

M08ChuOff	2Down	▶
M11ChuRej	In Mold	

● STEP3

Confirm Robot Operation in Mode and Press  will move to manual mode.

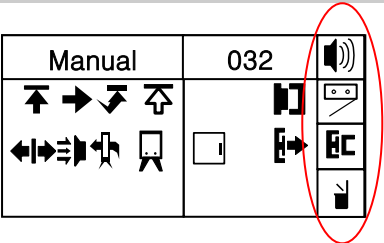
NOTICE

Pressing  while in Auto Mode, will move to Mode screen, and Press  move back to Auto Mode

4.3.4 Mode Setting 2

NOTICE

To use “Reject Release Motion” Contact Factory.



NO	Button	Screen		Description
		Use	No Use	
1				Buzzer On or Off [Change only in Manual Mode]
2				Detection function On or Off [Change only in Manual Mode]
3				Ejector Control On or Off [Change only in Manual Mode]
4				Reject Motion On or Off [Change only in Manual Mode]




4.3.5 Creating Mold File

(1) Mold Search Description

Search Mold Number

MoldNo	032
Input Mold Number to Search	
0 0 0	

(2) Each Button Function in Mold search Mode




NO	Button	Description
1	Numeric Key	Input Mold Number
2		Change to Manual Mode
3		Cancel the Input Number
4		Change to Mold Maintenance Screen with selected Number

(3) Mold Maintenance

Select , Create and Delete Mold File

MoldMgr	032
>00 FREE MODE	
22 MOLD22	
23 MOLD23	

(4) Each Button Function in Mold Maintenance Screen

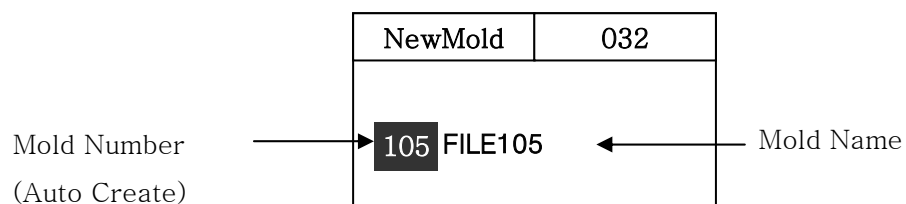
NO	Button	Description
1		Select 0 file can create any motion pattern and mode to create by user and move to New Mold Screen and save with Mold Number and name. 1~99: Basic Motion Pattern which is in system 100~999: User can create motion pattern.
2		Move to Manual Operation Mode.
3		Move to Delete screen for file with '>'

NOTICE







Mold Number can use only 2 Number, Mold Name can use 8 Character with Number

(5) New Mold

Save the motion pattern in the mode with new mold number and name.

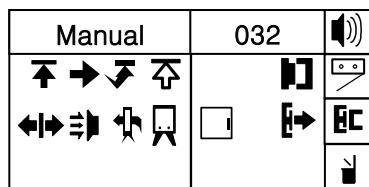


(6) Button Function in New Mold

NO	Button	Description
1	Numeric Key	Pressing the numeric key while blinking Mold Number will Input Number
2		Pressing Enter to save Mold Number and Name
3		Press  to scroll the cursor on the mold number.
4	 	Selecting Mold Name Character.
5		Change to Manual Mode

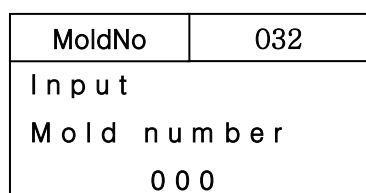
(7) Creating Mold File

Creating Mold file with new motion pattern



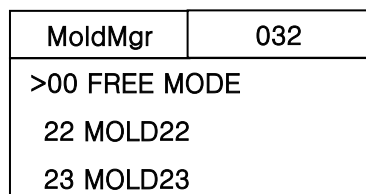
● STEP 1

Press + and move to mold search Screen



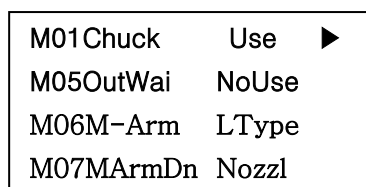
● STEP 2

Press to change mold maintenance mode.



● STEP3

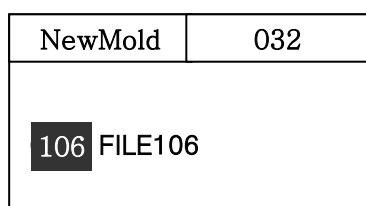
Move cursor ">" to 00 and press .



● STEP 4

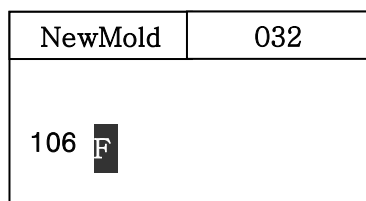
Press or move "►" icon to the mode to select. ,

Press to change mode and press to set



● STEP 5

Input Mold Number with Numeric Key and Press to save data.





● STEP 6

Press button will move cursor to first character of Mold Name



NewMold	032
106 A B	

● STEP 7




Press  , select Character
It will displays A~Z, 0~9, _, -,

















NewMold	032
106 AB	

● STEP 8


Press  move to next Character, Press  to save data.

NOTICE

Press  will move cursor to left side and, Change the text with pressing   button.

Manual	106	
   	 	
   	 	
		

● STEP 9

Press  will create mold name, save and move to manual mode.

4.3.6 Delete Mold File


(1) Delete Mold File

Delete Mold File that created before .



NOTICE

Currently open mold file can not be deleted.
















Selected
Mold File

MoldDel	032
1 0 5 F I L E 1 0 5	
D e l e t e ?	
[Y () / N (S t o p)]	



(2) Button function in Mold Delete Mode

NO	Button	Description
1		Delete Mold Selected file and move to manual mode.
2		Cancel operation and Move to manual mode


(3) Delete Mold File

Manual	032	
   		
   		
		

● STEP 1



Press  +  move to mold search screen.

● STEP 2

Press  and move to mold maintenance screen.


MoldNo	032
Input Mold Number. 0	


● STEP 3

Select mold file to delete with pressing  or 


MoldMgr	032
>105 FILE105 106 AB 107 MOBIL	
















● STEP 4

Press  displays “<Mold Number><Name>
Delete?”

MoldDel	032
105 FILE105 Delete? [Y () / No (Stop)]	

● STEP 5

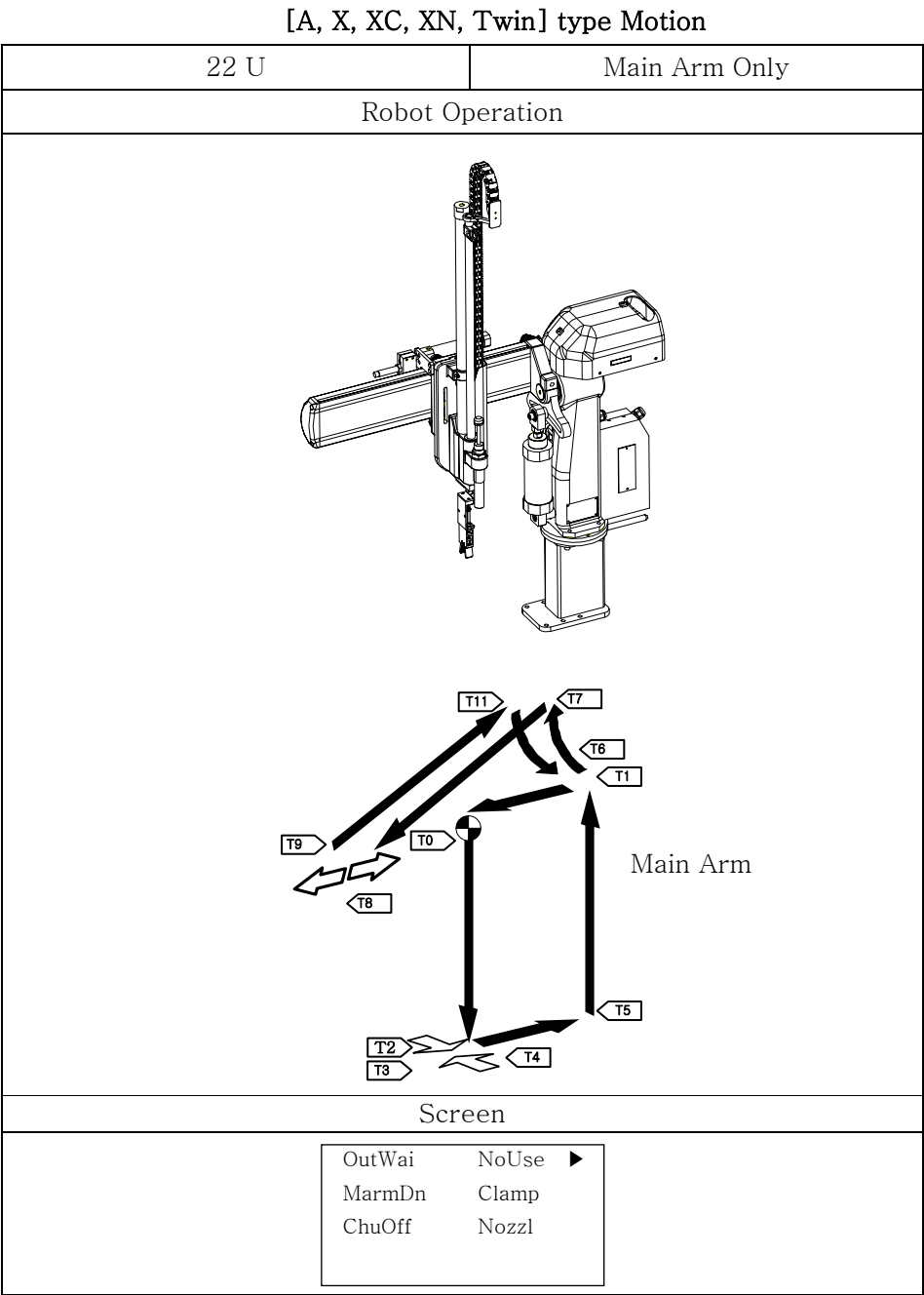
Press  will delete selected file and moves to manual mode

Manual	032	
   		
   		
		

4.3.7Setting Basic Motion Pattern

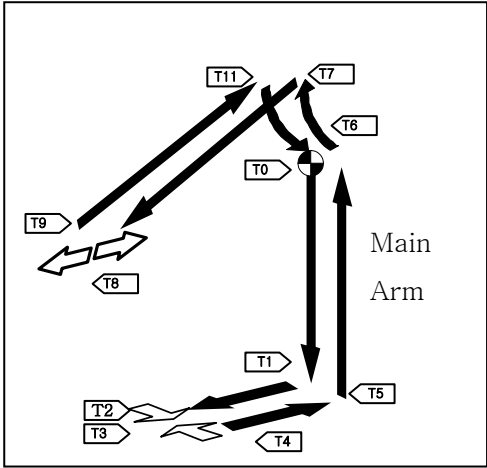
(1) Description of Basic Motion Pattern

The Motion pattern for simple and popular operation are already memorized in the system
Can change some mode from the similar operation that want to create, and setting



(2) Selecting Basic Motion Pattern

Example) Main Arm Only , LType, Take Out parts with Chuck and Swing and Release



[Mold Number 32]

Manual	032	

MoldNo	105
Input	
Mold Number	32

MoldMgr	105
>032 MOLD32	
033 MOLD33	
036 MOLD36	

Manual	032	

OutWai	No Use	◀
MArmDn	Clamp	
ChuOff	2Down	

● STEP 1

Set Mold Number 32 which is similar with Example except Part Open

● STEP 2

Press and , moves to Mold Search Screen

● STEP 3

Pressing will input 32 and Press will move to mold maintenance screen.

● STEP 4

Cursor is located at 32 mold, press moves to manual mode with 32 Mold Motion Pattern

● STEP 5


Pressing button moves to mode screen.
















● STEP 6

Press , move '▶' to ChuOff(Chuck Off) and Press ,change change 2Down to OutSid.

OutWai	No Use	
MArmDn	Clamp	
ChuOff	OutSid	◀

● STEP 7

Press  to move to Manual Screen

Manual	032	
   		
   	 	
		

4.3.8 Step Run



(1) Description of Step Run

Step operation will operate the robot step by step of each motion.















After origin, will not displays “>” cursor, pressing  will displays “>” at the first step

StepRun	032
>Down	
Kick	
ChuOn	

(2) Button Function

NO	Button	Description
1		Press Up Arrow Key will Operate Step Operation
2		Move to Manual Mode

(3) Step Operation

Manual	032	
        	 	 

● STEP 1

Press  moves to Step Operation Screen

StepRun	032
>Down	
Kick	
ChuOn	

● STEP 2

Pressing  button will operate one step

Press  will move to manual mode

4.3.9 Input/Output

(1) Description

Confirm Input, Output, Interlock

Input	032
X11 MArmUpOK	●
X16 ChuckOK	○






<Input Screen>

Output	032
Y20 Down	●
Y21 Kick	●
Y22 MArmGrip	○

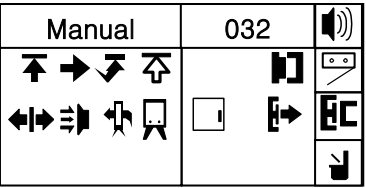
<Output Screen>

Input				Output			
X11	Main Arm Up Confirm	MArmUpOk		Y20	Down	Down	
				Y21	Kick	Kick	
X16	Chuck Confirm	ChuckOk		Y22	Chuck	Chuck	
X14	Swing Confirm	SwingOk		Y23	Swing	Swing	
X15	Swing Return Confirm	SwingRtOk		Y2F	Swing Return	SwingRt	
				Y24	Chuck Rotation	ChuckRo	
X17	Vacuum Confirm	VacuumOk		Y25	Vacuum	Vacuum	
				Y26	Nipper Cutting	NipperCut	
X1G	Sub Arm Up Confirm			Y2D	Sub Arm Up	SArmUp	
				Y2E	Sub Arm Kick	SArmKick	
X1F	Sub Arm Grip Confirm			Y27	Sub Arm Grip	SArmGrip	
				Y28	Alarm	Alarm	
				Y2G	Main Power	MainPower	
Interlock Input				Interlock Output			
X1H	FullAuto	FullAuto	DC	Y29	Cycle Start	CycleStart	Relay
X19	Auto Injection	Injection	Relay	Y2A	Mold Open/Close	MoldOp/Cl	Relay
X18	Mold Open Complete	MoldOpen	Relay	Y2B	Ejector	Ejector	Relay
X1A	Safety Door	SafetyDoor	Relay	Y2C	Conveyor	Conveyor	DC
X1B	Reject	Reject	DC	Y28	Buzzer	Buzzer	DC
X1I	EMO from IMM	IMM EMO	Relay				

(2) Button Function

NO	Button	Description
1		Displays 3 information in one page and move to next page.
2		Change Input Information screen to Output Information Screen
3		Change Output Information screen to Input Information Screen
4		Move to manual mode.
5		Move to Auto Mode

(3) Confirm Input / Output Signal



● STEP1

Press  and  displays Input / Output screen.

Input	032
X11 MArmUpOK	●
X16 ChuckOK	○


● STEP 2

Pressing  or  change Input or Output

Pressing  or  select signal to confirm

Output	032
Y20 Down	●
Y21 Kick	●
Y22 MArmGrip	○

● STEP 3

Press  move to manual mode.





Press  move to auto mode.

4.4 Auto Operation

(1) Description

Press Auto
button to
operate Auto
Mode



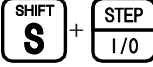

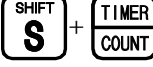
[Auto Message]

AutoMod	032	
>Down	0.0 0.0	
Kick	0.0 0.0	
ChuOn	0.0 0.0	


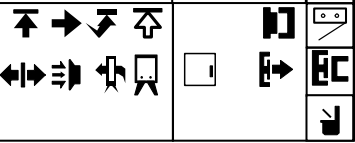
[Auto Mode Screen]

Order of Origin		
NO	In Mold	Outside of Mold
1	Kick Return	Up
2	Up	Kick Return
3		Swing Return


(2) Button Function

NO	Button	Description
1		Stop Auto Operation and move to Manual Mode
2		Move Mode Screen
3		Move I/O Screen
4		Move Timer Screen
5		Move Counter Screen

(3) Auto Operation


Manual	032	
		





● STEP1

Pressing  button displays Auto Messages


Press Auto Button to operate Auto Mode

● STEP 2

Pressing  moves the robot to origin and start auto operation.



AutoMod	032	
>Down	0.0 0.0	
Kick	0.0 0.0	
ChuOn	0.0 0.0	





● STEP 3

Pressing  will stop auto operation and moves to manual mode

4.5 Cycle Operation


(1) Cycle Operation

Manual Mode, Pressing  and  moves the robot to the origin point and operate 1 cycle (If Outside waiting has been selected, robot arm will swing)


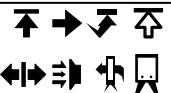
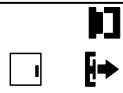

Cycle	032		
>Down	0.0	0.0	
Kick	0.0	0.0	
ChuOn	0.0	0.0	

[Cycle Screen]



(2) Each Button Function





NO	Button	Description
1		Stop Operation and Moves to Manual mode

(3) Cycle Operation

Manual	032	
		

● STEP1

Press  and  , moves to the cycle operation mode. Operate 1 Cycle and moves to manual mode





Cycle	032		
>Down	0.0	0.0	
Kick	0.0	0.0	
ChuOn	0.0	0.0	

4.6 Error History

(1) Description

Error Hist	1/40
0 4 / 1 2 / 1 5	
13:11:25	
1 5 2 Swing Error	



(2) Each Button Function

NO	Button	Description
1	 	Move the cursor to different error history
2		Change to the manual mode
3		Change to the Auto Mode

(3) Checking Error History

ErrHist	1/40
0 4 / 1 2 / 1 5	
13 : 11 : 25	
1 5 2 SwingError	

● STEP 1


Press  and  at the same time, displays error history screen.


ErrHist	2/40
0 4 / 1 2 / 0 5	
04 : 12 : 26	
1 6 1 ChuDetFail	

● STEP 2

Find error with pressing  or  button

● STEP 3

To move to manual mode, press .

To move to auto mode, press .



4.7 Version Information

Version
TP V 0 1 . 0 0
SC V 0 1 . 0 0
TOPIV-A


(1) Version Information


Version
TP V 0 1 . 0 0
SC V 0 1 . 0 0
TOPIV-A

● STEP 1

Press  and  at the same time , displays version information .

● STEP 2

To move to manual mode, press 

To move to auto mode, press 

4.8 Error Recovery

(1) Error Description

Displays error recovery method

Error	043
152 S w i n g E r r (X 1 4) C o n f l r m S w i n g S e n s o r	


(2) Error Recovery

Error	043
152 S w i n g E r r (X 1 4) C o n f l r m S w i n g S e n s o r	



● STEP 1

Pressing , Stop Buzzer

● STEP 2

Pressing  again will close message screen

4.9 Change Language

Press  and  at the same time, change Korean, English, Chinese

4.10 Robot and Program maintenance Screen

Turn power on with pressing



FindError	1s
AutoInput	NoRun
SafetyDoor	Run
Injection	Run

NO	Button	Description
1		Move cursor and displays setting
2		Pressing right and left arrow button will change mode and pressing will save data
3	Numeric	Input Number
4		Save data
5		Moves to Manual Mode

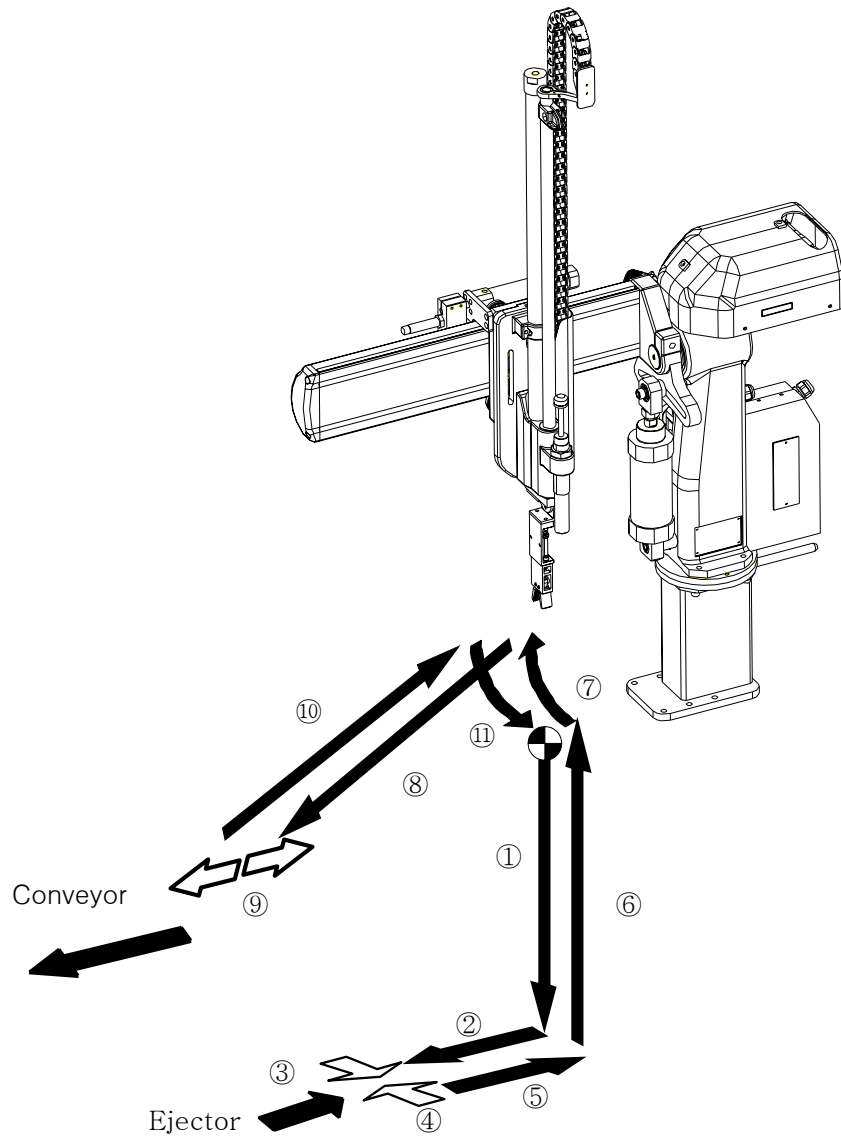
NO	Screen	Mode	Order	Default/Setting	Description	Etc								
1	<table><tr><td>FindError</td><td>1s</td></tr><tr><td>AutoInput</td><td>NoRun</td></tr><tr><td>SafetyDoor</td><td>Run</td></tr><tr><td>Injection</td><td>Run</td></tr></table>	FindError	1s	AutoInput	NoRun	SafetyDoor	Run	Injection	Run	Error Evaluation		Default=1sec	Selecting 0 will not use Error Evaluation Function	# Sec (1, Unit : Second)
FindError		1s												
AutoInput		NoRun												
SafetyDoor		Run												
Injection		Run												
2		Auto Signals	①	Use	Full Auto Signal is Required									
			②	No Use(=default)	Full Auto Signal is not required									
3		Safety Door Signals	①	Use(=default)	Safety Door Signal is required									
	②		No Use	Safety Door Signal is not required										
4	Injection	①	Use(=default)	Injection Signal is required										
		②	No Use	Injection Signal is not required										

4. Operation

5	<div> RejectIMM NoRun ProceTim 0s Dat 00/00/00 Tim 00:00:00 </div>	Reject from IMM	①	No Use (=default)	Rejection signal is not required	
			②	Use	IMM Rejection signal required to reject parts	
6		Process Time			Setting Process time to 0 will not use process time	## (00, Second)
7		Date			Setting Date	
8		Time			Setting Time	
9	<div> DelAllMold Yes DelErrHist No </div>	All Mold file Delete	①	Yes	Pressing Enter will delete all mold file	
			②	No	Pressing Enter will not delete all mold file	
10		All Error history Delete	①	Yes	Enter will delete all Error History	
			②	No	Enter will not delete all Error History	

5 Follow Up

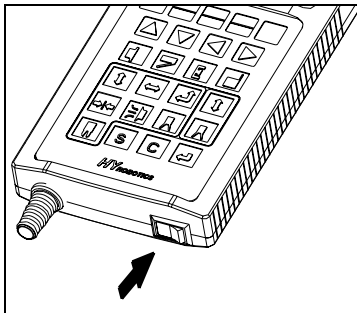
5.1 Motion Pattern Selection



- ①. Down
- ②. Kick
- ③. Ejector
- ④. Chuck ON
- ⑤. Kick return
- ⑥. Up
- ⑦. Swing
- ⑧. 2nd Down
- ⑨. Chuck Off

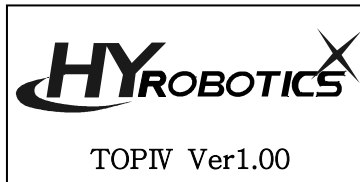
- ⑩. 2nd Up
- ⑪. Swing Return

5.2 Start Up



● STEP 1

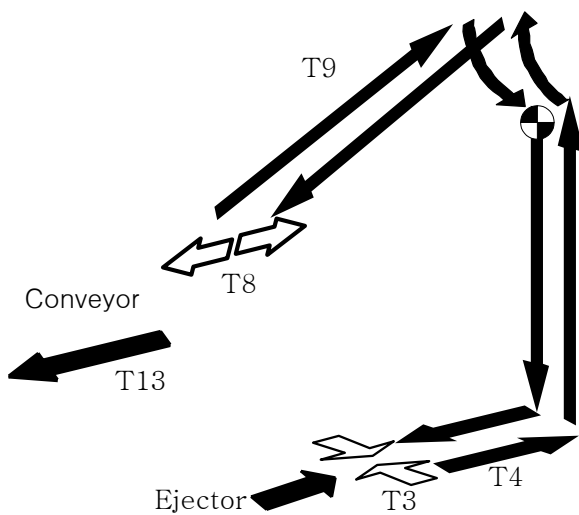
Turn On Power.



● STEP 2

Displays Logo and moves to manual mode

5.3 Timer setting



NO	Default	Setting	Name
T3	0.5 sec	0.3 sec	Chuck
T4	0.5sec	0.3 sec	Kick return
T8	0.5sec	0.6 sec	Open
T9	0.5sec	0.4 sec	2 nd Down
T13	3 sec	2 sec	Conveyor

Timer	
T3 Chuck	0.5 < 0.0
T4 KicRt	0.5 0.0
T5 Up	0.5 0.0

Timer	
T3 Chuck	0.3 < 0.3
T4 KicRt	0.5 0.0
T5 Up	0.5 0.0

Timer	
T3 Chuck	0.5 0.0
T4 KicRt	0.5 < 0.3
T5 Up	0.5 0.0

Timer	
T3 Chuck	0.5 0.0
T4 KicRt	0.3 < 0.3
T5 Up	0.5 0.0

Timer	
T6 Swing	0.5 < 0.0
T7 2Down	0.5 0.0
T8 Open	0.5 0.0

Timer	
T6 Swing	0.5 0.0
T7 2Down	0.5 0.0
T8 Open	0.6 < 0.6

● STEP 3

[Move to timer screen , set T3 chuck delay to 0.3 sec]

Press  , move to timer screen.

Press  and press  to save data.

● STEP 4


[Setting T1 Kick Return to 0.3 sec]



Press  , move cursor to Kick Return Delay.

Press  and input 0.3sec, Press  to save data

● STEP 5

[Set T8 to 0.6 sec]

Press  , move the cursor to MaiRel

Press  to Input 0.6 sec and press  to save data

Timer	
T09 2Up	0.5 < 0.4
T10 ChuRt	0.0 0.0
T11 SwRt	0.5 0.0


Timer	
T09 2Up	0.4 < 0.4
T10 ChuRt	0.0 0.0
T11 SwRt	0.5 0.0



Timer	
T13 Conve	3.0 < 0.0

Timer	
T13 Conve	2.0 < 2.0

● STEP 6


[Set T9 2nd Up to 0.4 sec]




Press , moves the cursor to 2nd Up Delay (2Up)

Press  to input 0.4 sec, Press  to save data

● STEP 7

[Set T10 to 2 sec]

Press , moves the cursor to Conveyer (Conve)

Press  and  to input 2 sec, press  saves data.

Press  to move to manual mode.

5.4 Mold Create

MoldNo	
Input	
Mold Number.	
	0

MoldMgr	
>000 FREEMODE	
022 MOLD22	
023 MOLD23	



M00ArmSet	M&S	►
M01Chuck	Use	
M0Vacuum	NoUse	
M03ChuRot	Use	

NewMold	
130	FILE100

NewMold	
130	F



NewMold	
130	A B


● STEP 8

Hold  and press , displays mold search mode.

Press  moves to mold maintenance screen and cursor will be on 0





● STEP 9

Pressing  on the 0 Mold (Free mode) and moves to mode screen , Press  to confirm motion pattern and mode ,

Press ,  to move to mold maintenance screen


● STEP 10


[Set Mold Number to 130]




Press    to input 130, Press  to save data .

● STEP 11

[Set Mold Name to AB]

Press , cursor will move to first character and blinking .

Press , select A with pressing  , pressing

 move to next character space, press   select

“B” , and Press  to save data.


Press  will create Mold File and moves to Manual mode

5.5 Step Operation

StepRun	130
>Down	
Kick	
ChuOn	

● **STEP 12**

To confirm the motion pattern is right , operate step operation

Pressing  will operate motion step by step


Press  and moves to manual mode





5.6 Auto Operation

Press Auto
Button to
Operate Auto
Mode


● **STEP 13**

Press  change to Auto Message Screen.

Press  again will start Auto Operation

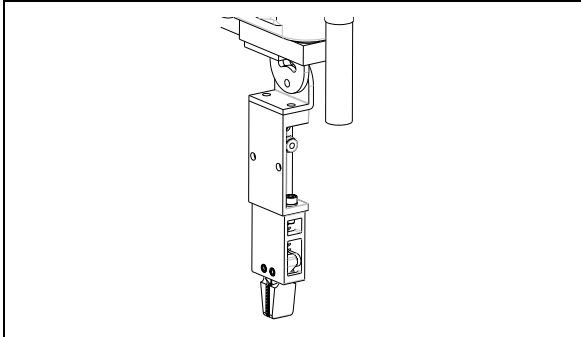
AutoMod	032	
>Down	0.0 0.0	
Kick	0.0 0.0	
ChuOn	0.0 0.0	

● **STEP 14**

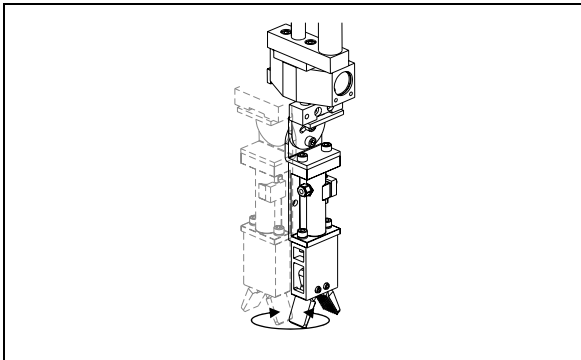
To Stop Operation press 

D.Optional features

The swing type take-out robot consists of A, X, XC and Twin. Contact us for details.

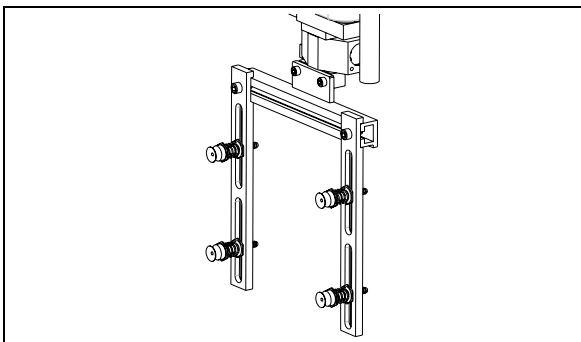


- A type
Sprue Picker with Gripper



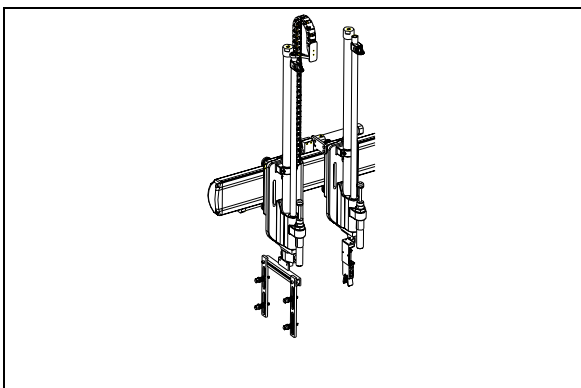
- X type
Sprue Picker with Gripper + 90° Rotation

Releasing product onto a conveyor or a chuck
with scratch prevented.



- XC type
Sprue Picker with Gripper + 90° Rotation +
Vacuum Unit

Multiple product take-out with suction.



- Twin type
Correspond to 3-Plate Mold
Sprue Picker for 3-plate Mold
With Gripper + 90° Rotation + Vacuum Unit



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